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8x16 city track plan
turn to page 48 for details

LIONEL in 1958

Space-age strategy for Super O and O-27 trains page 50

HOW TO

MAKE spring loaded track switches page 71

BUILD a drive-in theater from a DVD player page 46

WIRE Lionel command control page 71

TWO GREAT LAYOUTS inside

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Contents

04/05 Volume 73, Number 04

On the cover: Double heading over the Beaver River on Deep Mine Pacific & Idaho Northern. Jack Thomas art.

4 From the Editor
Have room in our mail?

6 News & Products
Hobby industry news and product announcements

18 Railway Post Office
Letters from our readers

22 Workin' on the Railroad
My favorite hobby that's also
a career choice

26 Workshop
Air conditioning for a passenger coach

28 Coming Events
Upcoming shows, conventions, and meets

30 Step by Step
Easy plate girder with stylized
rivets
by Kevin Case

42 To the mines for silver
1920s railroading comes alive on the HO Pacific & Idaho Northern
by Chuck Doyle

48 Desert scenery . . . without breaking a sweat
Step-by-step techniques for modeling realistic Western terrain
by Pete Siedzik ■ Online bonus: trainsmagazine.com

52 Build N scale switch stands
Scrap parts, dowels, and rod set up your relays
by Chet Mellinger

54 Urban railroading in a Gulf Coast port
A freelance HO layout in a 10 x 14 room
by Cliff Rogers

58 Main line through the mountains
An HO scale switch plan for Southern Pacific's Donner Pass
by John Armstrong

4 A coal mine and details for the Turtle Creek
Part 4: Structures, figures, and what might it take?
by Jim Kelly ▶ Online bonus: [illegible]

12 Passenger cars from core kits
Part 4: Working with etched metal car sides in HO and N
by Paul J. Dolfen

[illegible]

20 Hooked on British rails
The Hornby OO 4-scale Western Train
by Greg Amerson

28 Information Desk
How to build a freight train
by Carl Swanson

32 DCC Corner
Wiring a Peco Electrofrog crossing for DCC
by Mike Polgreen

36 Product Reviews
HO Liberty N scale from Broadway Limited Imports
▶ Online bonus: [illegible]
Prizes, starter kits and RPMs with dual-mode sound decoders
▶ Online bonus: [illegible]
other N scale Class B Shay steam locomotive

42 Trains of Thought
My insurance company
by Tony Koester

108 MR's Art Carver Kitbashing Contest rules

121 Index of advertisers

122 Model Railroading is Fun
A light look at our hobby
by Steve Rose

Coaling tower lesson: Mark cuts the HO scale Atlantic Rivers Inc., a layout depicting an early 1960s New England trunk line and built for operation by professional railroaders. Carl Swanson

Editorial

No Tears for LeVan

The fate of Conrail's top man, David LeVan, is certain. When all is said and done, Mr. LeVan is out of a job

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News&Products

HO scale General Electric Evolution diesel locomotive These GEs line HO-scale superior-detailed plastic locomotives is now available in hobby shops. The ready-to-run Evolution features brass handrails, horn and exhaust, stainless steel simulated pipes, and operating ditch lights. The Explorer series models (8200) have a high-tech motor-driving Digital Command Control (DCC) decoder and SoundFX sound system. Pioneer series models come without a DCC decoder and sound and are priced at $200.

2006 Nuremberg Toy Fair show report

The 2006 Nuremberg Toy Fair was held February 1–7, 2006, in the show to celebrate 100 of Germany's favorite model railroad companies' newest displays were there at the show. The following are just some of the latest releases.

Bemo displayed a sample of its 1/32 scale metre gauge Series 99 locomotive. It will come with sound, lighting, and Digital Command Control decoder option.

Brawa unveiled its Royal Bavarian State Rly. class G 4/5 H and 0980 class 98 14 2-6-0 steam locomotives in HO scale. The models, available with and without Digital Command Control and a variety of sound, feature die-cast wire chassis, boiler, and tender, and metal wheels and gears for smooth, and powerful drives. The locomotives are also available in two DRG versions.

Electronic Solutions Ulm had samples of its HO Faulhaber Digital Command Control sound decoder. The device features two channels, built-in automatic coupler, and features mated DCC. Price for the SC16 decoder, scheduled for release in June 2006, has yet to be announced.

Fleischmann diesel sound cars available in HO and N scales. In HO, the three had a sample of an EMD class 77 2-8-0 with smoke stacks. The model features a die-cast metal chassis and Stromlinien-color-gray. In addition, Fleischmann showcased a HO scale DB class 044 steam locomotive. The model has a tender with illuminated coal bunker simulation. Both models have installed NEM sockets for mounting a Digital Command Control (DCC) decoder.

M. K. Performance announced a DB class 3-10 steam locomotive. The die-cast metal locomotive has a detailed cab interior, opening smokeboxes, smokestack light, working desk headlights, and coupler pickup from wheels or overhead catenary.

The firm also announced a new N scale DRG engine crew set. The set will include a DCC equipped DB class 01 2-8-4 steam locomotive, three short coach, serviced class coach cars, and six crew members with operating railings and Fleischmann's most reliable Twin-Center DCC controller.

Kato will be releasing N scale 2-8-4 and 4-8-4 steam locomotives and matching passenger cars decorated in Great Northern's Empire Builder livery and Pullman Green paint scheme. Locomotive features will include a split frame mechanism, slow-speed motor, lighting, and authentic wheel arrangement. Expected

Highlights in this issue

10 Model Railroad Hobbyist magazine test

12 Micro-Trains line announces new locomotives

14 Precision Craft Models, Inc.'s Hideaway Series

16 Walthers Proto 2000 HO scale Type 2F 4-6-0

18 List of manufacturers in News & Products

National conventions

National Model Railroad Association Philadelphia, PA, July 2-6, 2008. www.nmra.org

S scale Denver, CO, August 6-10, 2008. www.nyandwesternrr.com/chamber.html

G scale Pennsylvania, July 19-20, 2008. www.mtmolesandrr.org

Garden railways Aurora, Colo., Lot, July 5-6, 2008. www.bigrs.org/conventions/index.html

Shows can be found online or in newsstands each. Click on Schedule of Events under the Resources heading. You can print your event online, or you can send us the information and we'll enter it for you.

New hobby shops

Arizona, Lake Havasu
My Train Shop
1680 McCulloch Blvd.

California, Tehachapi
Gary's Train Junction
20725 South St., no. 9

New York, Cold Spring
Hudson Valley Trains
160 Main St.

Oklahoma, Norman
Oklahoma Live
2013 W. Main St.

Virginia, Gainesville
Gainesville Depot
14614 Sommer Poplar Hwy.

Wisconsin, Brookfield
Caboose 27, Trains & Hobbies
13870 W. North Ave.

Micro-Trains expands Z line

Micro-Trains Line Co. will be releasing its first freight car in its Z-scale line in June. The line will debut its Premium Standard RTR Z-scale line, consisting of 70 freight cars. The cars will feature a Micro-Trains-built truck, a Micro-Trains coupler, and a wheel/axle assembly. Each car will be packaged in a clear plastic display box. The first road name will be Atchison, Topeka & Santa Fe.

Rapido Trains Inc. to offer ready-to-run passenger cars

General American Car Co. 36-foot double-sheathed refrigerator car. Kits and ready-to-run include S&P Santa Maria Valley, Evansville Packing Co., Klondyke and Wood Brothers. Two-road assortment in cars decorated for years 1934-50. Ready-to-run: Atlas Model Railroad Co.

40-foot single-sheathed boxcar. Chicago, Burlington & Quincy, Missouri Pacific, Northern Pacific, Southern Pacific, Texas & Pacific and Western Pacific. 1937-50 in 2/3-34 scale. Ready-to-run: Atlas, Bowser.

HO scale passenger equipment

40-foot express boxcar. Chicago & Eastern Illinois (five different engines, other Pullman-Standard 40'-0" riveted steel sheets and engraved double-wagon). Ex-Broadway model. Ready-to-Roll: Athearn Trains.

HO scale trestles

Pottery screenhouse with oil tender. Kansas, Oklahoma & Gulf, Missouri Pacific, Chicago, Burlington & Quincy, New York Central and Union Pacific. Athearn screenhouse with tender and three mechanisms to operate rotary blades and tumbler. Screenhouse kit totals 1,049-98 in 2/3-34 scale. Ready-to-Roll: Atlas, Athearn, Bowser, Trains.

HO scale structures

Midwest farm combination set. Prairie barn, milk cans, house, and house & shed. Laser-cut wood kits with acetate windows and silk-screened decals. Barn dimensions 5-1/2" x 9-1/2" x 7-1/2". House dimensions 4-1/2" x 3-1/2" x 4-1/2" and Kaiser's Model Structures 7-1/4" x 5-1/2" x 4-1/2" (2,570-97). Atlas, Life-Like Model Builders, Inc.

Southern Pacific Type 33 two-story combination depot. Laser-cut wood kit with cast-resin and silk-screened decals. Dimensions: Prairie, Mission style, loading dock, passenger waiting room and office details. Dimensions: 9-1/2" x 44-1/2" x 17" (2,570-97). Atlas, Model Builders, Inc.

Grimes's Pioneer Home. Laser-cut wood kit with cast-resin and laser-cut shingles and gargoyle. Dimensions: 9" x 7". Limited run. (2,570-97). Dimensions: Atlas.

Main Ave. Pilot Van. Laser-cut wood kit. Two-building set includes old brick, cracked stucco and weathered clapboard detail, including color signs and corrugated metal roof. Dimensions: 9-1/2" x 4-1/2" (2,570-97). Dimensions: Atlas.

Atchison, Topeka & Santa Fe Hermosa Beach, Calif., freight depot.

N scale Evans gondola

Atlas Model Railroad Co. is releasing an N scale kit, such as shown, of 40' gondola. Kit made of wood & die-cast metal, with brake wheel, grab irons, underframe, separate side and end loading, and fish-belly center sill. Kits are under tooling now with shipments slated to begin in mid-1998. Wood cars and metal trucks & wheels. Ready-to-Roll: Atlas, Bowser, Trains, Model Railroad Craftsman, Model Railroad Planning, Railroad Model Craftsman, Model Railroader, Classic Trains, Railroad History, Railroad Heritage, Railroad Model Craftsman, Model Railroad Planning, Railroad Model Craftsman, Model Railroad Planning, Railroad Model Craftsman, Model Railroad Planning

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News & Products

N scale freight cars: New freight cars from Micro Trains Line Co. include a Union Pacific 40-foot Hy-Cube boxcar; $29.95; Minnesota Transfer Railway 50-foot single-door boxcar, $19.95; Canadian National 55-foot mechanical refrigerator car, $17.95; depressed rug car, $19.95; and A.E. Staley Manufacturing Co. 39-foot single-sheathed hopper car, $18.75. All of the models are equipped with Magne-Matic couplers.

Warehouse: 6000 dragline. Bucyrus-Erie 6000 dragline with 200-foot boom, 27-foot dipper, and counterweight and bucket. Over-walking machine has separate gantry and A-frame. 1/125 Classic Construction Models

N scale locomotives

2-6-6-2 Consolidation steam locomotive. Arnold-Rapido of North America, Inc. Baltimore & Ohio Mallet 2-8-8-2 Consolidation; Pennsylvania 4-6-2 Pacific; Pennsylvania 4-4-2 Atlantic; and Virginia & Truckee 4-6-0 Ten-Wheeler with headlight and separate applied details. $124.95 ea.; $134.95 each. July 2004. Arnold-Rapido of North America, Inc.

General Electric U25B diesel locomotive. Two road numbers are Phase IIb locomotives painted for Atchison, Topeka & Santa Fe; Pleasantville, Pennsylvania; and NJ Transit Rail Operations, Inc. Hoboken, New Jersey. Two road numbers are Phase IIIb locomotives decorated for Santa Fe and Conrail. Two more versions are Phase IIIb locomotives lettered for Rock Island. Two power plug doors on Phase IIIb powered Rio Grande A-unit, NJ Transit B-unit, and Rock Island B-unit. Digital Command Control decoder equipped; $134.95. July 2004. Kato® USA, Inc., Model Railroad Div.

N scale freight cars

Three-bay centerflow quad-vent open hopper. Baltimore & Ohio, Washington Terminal, Chesapeake & Ohio, and Western & Northwestern Railway. Five cards; $19.98 ea. 2004. Accurail

Fruit-type 40-foot double-plug-door refrigerator car. Two road numbers as models delivered for Fruit Growers Express, Transportation Unit Co., and Pacific Fruit Express. Two road names include Colonial Beer, Lehigh Valley, Ann's Food Products, Pittston Brands, and Yellow Kelly. $17.95. June 2004. Accurail

Pennsylvania 40-foot 6-door boxcar. Two road numbers. Union of Canada, Canadian National Railways, Chicago & St. Louis, Lehigh Valley, Wilkes-Barre, New York, New Haven & Hartford, Pennsylvania Rail Manufacturing Co., Railroad, and Western Maryland. Over-plate rivet-head plastic bodies and body-side brackets complete. $14.95 ea.; Accurail

N scale structures

Wayward Station. Two-story wooden structure. Prepaint

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Gulf + Gallopping Geese railfleet: Now available in Gulf (1-end and 2-end pilot shown) are railboxes from Precision Craft Models. The railboxes, available with freight and passenger fenders, are offered with Lackawanna Digital Command Control (DCC) and sound for $299.95 and without DCC or sound for $199.95. The fenders are complete for Rio Grande Shoshone and five other schemes plus painted black and silver (kit) underframe.

Interior lighting kit: Consists of...

N-Gauge Brilliant Interior Car wood decoders: For N- scale wood and steel Intermountain, Kadee, Atlas, Bachmann, Life-Like, Walthers, and Model Power high-detail passenger cars with 14-, 20- and 24-speed steps. 12 channels and six function outputs provide many prototypical lighting effects, such as ditch lights, strobes, and more. Programmable with any DCC system. Includes 8-pin NMRA plug. Model Merchants Corp.

Light emitting diode train lights: For American & Classic Metal Products Co. 2-8-8-2 diesel locomotives. Includes two lamps, white and blue simulate light-emitting diodes (LED). Kadee and Intermountain couplers fit cars. Requires soldering skills. Accessories Unlimited.

Scenery

Dark gray ballast: Real rock...

Software

TrainScape: Software for designing track or layout plans on...

Bulgarian Windows: Mr. Bill, 4.2 MB file for Windows and DataMaster 640-KB. Dig-It Laser allows tracking Bachmann DataMaster and plans from Glen Wasserstrom, Bill Check Plans via Model Railroader's, 670-KB. Train Master Software.

Books

Atlas Fantastic Layout Booklet: Features for planning. What HO and N scale track plans. 12 free track plans and five N scale track HO layouts. Includes plans for beginners, intermediates, and advanced model railroaders. 36 Atlas Model Railroad Co.

Civil Engineering for Outdoor Railroads, Vol. 1: Provides practical guidelines for 7½" gauge, 10" gauge, 7½" gauge, 4½" gauge, and G, O, SO, HO&S, and N scales. $21.95. Kalmbach Publishing.

Steam by the Calendar: A collection of inspired modeling articles published by the Railroader over the past 50 years. Includes articles on how to build models, paint, lettering, and more. $29. Kalmbach Publishing.

Scale drawings of the Peach Bottom No., now known as the Lancaster, Oxford & Southern RR, Vol. 1: Full prototype track with scale drawings, short history, and present-day photos of stations and small warehouses along the 13.6-mile line. 72 pages. $24.95 plus $3.50 shipping. Pennsylvania residents add 6 percent sales tax. Rose Valley

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News & Products

40ft scale American Car & Foundry 14,000-gallon Type 21 insulated tank car item is Intermountain, Inc., now offers a ready-to-run version of its ACF tank car in the Proto 2000 Series. The model is available decorated for Magnolia Petroleum Co., Union Tank Car, General American Transportation Co., Sinclair, and Texaco. The tank car comes at $30. Features include metal wheels, detailed under frame, and Proto 2000 magnetic knuckle couplers.

2006 One Source Scale Model Railroad Industry Directory A new 4000 item directory of manufacturers and distributors in the United States and Canada. Contains 96, 8½ x 11 and large scales. $19.95 plus $3.50 shipping. (Underground Railway Press)

Video/DVD

Great Model Railroads, Vol. 22 Chuck Hitchcock is the Master Showmaster at Rocky Diamond in this December 2005 issue of Model Railroader. Includes tips on how to paint wood boxcarsides, detail and light structure interiors, and build an HO Shay kit. Shipping $4. (Kalmbach Publishing Co.)

Train Play Lift the lid on the hidden world of model railroad layouts. Includes footage of the more modern railroad layouts & the museums and memorials with model railroaders. 78 minutes. $19.95 plus $3 shipping. California residents add 8.75 percent sales tax. (Golden Bear Model Railroad Museum)

Constructing Ultralight Pneumatic Gun Modern Building Kits Ready-to-use construction kit. N, HO and O scale kits. Includes tips on adding signs, weathering, and detailing walls. Also uses kit examples. $9.95 $24.95 plus $3 shipping. (Model Railroading Unlimited)

The Great Train Story Eleven live-action DVD's on HO scale trains at Museums of Science and Industry in Chicago. $9.95 (Video Treasures)

Club cars

Amherst Inc. 50-foot double-door boxcar. Announced HO scale kit, $19.95 plus $4.50 shipping. Initial run two-color. Allows choice between wood/steel sides and 7 optional side run. Model checks available to (PA-MARK Club, Modular Hobbies, 677 Jefferson Blvd., Warwick, RI) 02886 and e-mail to Rich@mrr.com

Duluth, South Shore & Atlantic 1900 Series 70-ton offset-side triple hopper. Box Car 40-foot boxcar (1950) Soo Lines centerdoor paint scheme, and Green Bay & Western 1930s series 50-foot exterior post boxcar. Announced HO scale kits. Two-rail versions get cut rates. $15 each. Interchange $20. Shipping $3. Any Soo Line theme car and the Announced Society Cars. $10 Box 2470, Wauwatosa, WI 53213. www.soolines.org

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[illegible]

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[illegible]

Caboose Industries
[illegible]

Central Valley Models
[illegible]

Classic Metal Works
[illegible]

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[illegible]

Lenz Electronics
[illegible]

Life-Like Products
[illegible]

Litchfield Station Arts
[illegible]

Micro-Mark
[illegible]

Micro Trains Line Co.
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Miniatronics Corp.
[illegible]

Model Railroading Magazine
[illegible]

Model Rectifier Corp.
[illegible]

Model Rectifier Corp.
[illegible]

Model Railroad Hobbyist
[illegible]

Monroe Models
[illegible]

Mountain Model Specialties
[illegible]

Mt. Albert Scale Models
[illegible]

Mt. Rainier Scale Models
[illegible]

Mtn. Model Imports
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Blue rue oxeye makes a rich picture

The bright green foliage of creeping mazus contrasts over the wall of leaf Clearwater Agave in Shelby Redbud near Columbus, Ohio

Hardy ice plant keep bulb thrive form in the low mid bloom about of leaves a the variety of Mark and Fine Rudbeck. Fort Collins, Colorado

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Question: How do you keep customers from crowding your right-of-way?

Avoid hostile takeovers

Liz Keller, Cape Hen, New Jersey, Zone 7

We are a rare generation that believed that when trees for creating foliage they purchased—then maybe. Sometimes we just use a shrub to keep things like lawn mowers from getting into our right-of-way. Creeping vetch is also effective but plant one crop to keep crop from your trees—it looks good when in an upward bloom, but we do it.

Round 'em up

Mark Evergill, New Chicago, Illinois, Zone 7

We have three problems with plant encroaching onto the tracks because of our original design, which included large trees and bird turnout. When needed, I occasionally use weed killer, but spraying flowering vines the invasive kind, and also we have to a few gallon plants with tag. Then, after killing a few of them in the bottle cap, the plants can be directed in such things without overspraying onto nearby invasion.

As for "chemical pruning," yes, I've done it on little ice, both on gates and wood fences with the chemicals. Choose alternately, which I'm sure found you answer with other, such as low-concentration spray fertilizer. In my experience, planting off the good parts mixing a piece of scrap cardboard, and spraying the concerned, everyone knows all the bushes and the doesn't ask because.

The first lines of defense

Bobby Hernandez, Northern Wisconsin, Zone 4

I believe that keeping the right-of-way weed free begins with the laying of the track and ballast. What has worked great for me is to dig a trench

[illegible] soap and [illegible] brush before the scrub rub its out. I also like the feminine pink scent of this version while recent years' hybrid – sweet apple. It really [illegible] a solid results to my clothing. Last generation [illegible]. Losing the power of two minutes, so as a bonus to keep sensitive skintones and nervous area sending cures on the market. I share 400 last hand [illegible] with stuffy bowls and my [illegible] make a lady on [illegible] sweet cloth the top of this shower. I then [illegible] this mark and [illegible] [illegible] [illegible]

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BNSF latest with engine-mounted video cameras

Pilot project on ex-Dash-9s will help determine scope of installations; NS is aiming at 1,000 units

The next time you spot one of Burlington Northern and Santa Fe (BNSF)'s ex-Illinois Central (IC) GE Dash-9s, or General Electric C44-9Ws, leading a train, you might want to "say cheese." It's one of a select handful of C44-9Ws or cabmo-ed-9 might take your picture.

BNSF, in a pilot project to help determine specifications and requirements for a locomotive-mounted digital video recording system, is the latest road to install forward-facing video cameras. (NS also has them; BNSF's test platforms are ex-CNW 4774, 6433, 6457, 6778, 7386, and 7464.

The test will determine whether cameras might help provide information on grade-crossing and train-pedestrian accidents. If it is deemed successful, BNSF envisions installing the cameras on most or not all, of its road units fleet.

The cameras, mounted on the windshield, in front of the engineer, enable to move side to side or up and down. The installations will include a microphone, placed outside the cab, for purposes of to record added sounds, such as the locomotive horn and bell. It will not capture conversation inside the cab.

Four manufacturers are providing the test cameras, which, according to BNSF spokesman Pat Hobbs, will determine the specifications and requirements necessary for a systemwide installation. If the test is successful, but a fleet-wide camera installation is deemed not cost-effective, an alternative plan would be to put them on all "lead-qualified" locomotives, such as the Dash-9s and C44-9Ws.

The GE-built Dash-9s had the first units starting for two reasons. They are usually preferred as lead units, and the cab was selected to train its installers that work was done at its Fairbanks, Calif., shops on just one type of locomotive. The units will be linked to road the system.

If there is a need to look at the video, say in case of a road foreman or mechanical department employee with shut off the camera so that it does not record. It also says the length of the tape stored by camera inside the locomotive can operate up to 18 days before they start recording over earlier by images.

Similar installations are in use on other railroads. Norfolk Southern has more than 850 cameras equipped locomotives, all originating from a pilot test on the Scandinavia Line of its Pied Island Division. It covers all Railroads' run 900, the railroad says the cameras help in eliminating unknowns, recording track conditions, speed, weather, visibility, the operation of signals, the sounding of an engineer's horn, and emphasizes on to train the right of way.

While cameras are not called on a main, with the data stored on a hard drive in the control box as well as on a removable PC memory card. To conserve recording time, the system shuts down after a locomotive has not moved for 10 minutes.

NS officials said the cameras were installed when the units came in for their 92-day inspections. set up cost was about $15,000. While this is similar to old video cameras, they digitally record the sound of the horn, the train's brake, turn of a wall, its speed, and brake applications.

NS plans to continue its testing cameras, and aims to have 1,000 on line by late 4 and 4 are viable, particularly regarding road... not all, or road units.

BNSF should know by the end of this year if full implementation of cameras equipped locomotives will be part of its future.

CN keeps adding to Dash-9 fleet; latest batch is Illinois Central's

One new Canadian National (CN) 4-6-0 rolls past Markham Yard in Homewood, Ill., at dusk this fall, with Chicago Bear Soldier Field (CHI) on Friday, July 13. The batch numbered 2307-2316, all assembled for IC, brings CN's C44-9W fleet to 217.

Hot times, but cleaner air, ahead

[illegible]

Alaska to try DPU on fuel trains

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Build an adjustable liftout

Liftouts are commonly used to span voids in benches. In such cases, the liftout makes easy work of access for expanded operations.

Liftouts have many uses. Woodworkers have struggled to make them work since model railroaders first began building layouts. The basics of liftout construction haven't changed much since wood benchwork, precision alignment, reliable electrical contact, and safety interlocks are still needed. The main new factor to the liftout and its approaches is more current as cleverly always into the shop.

Unfortunately, benchwork seldom ends up perfect alignment, even when it's bolted to the walls or floor. So when our layout's current expansion and construction, I developed liftouts that accept new and improved refinements and practicality to guide the longest reversible gate the rail trains.

The key to the design is the use of angled rails on the liftout to engage the rail ends. Even though the liftout is straight, both deck rails are considered and set at 45-degree angles to its side matching notches on the bench. Canted 45° deck plywood across the bottom of each opening to support the liftout and to provide vertical alignment. At least contact pin on each rail assures transmission alignment and provides electrical connections to the track. The approaches are constructed with common rails reversed underneath the layers.

Before I remove an liftout from the bench, I mark it on a piece of 1/4" scrap making magnets recessed underneath the adjacent benchwork. I attached a couple of small steel pieces that I screw in the underside of the liftout, securing them to match the magnets. To store the liftout, I use the in one end and it onto the magnets.

The track on the liftout has to cut joints staggered about 1/4" apart when they cross the angled rails. This arrangement allows me to add a short powered opposite each new pass over the rail ends work. These powered pull the wheelsets away from the opposite rail joint to keep the flanges away from the gaps.

To maintain horizontal alignment, I installed a 1/4" brass rod at each end for clamping. The liftout is glued and drilling a 1/4" hole down through the liftout and the plywood pad. Then I enlarged the lower holes slightly to obtain a slip fit with minimal play.

To access the rails, I used pieces of 1/4 x 3" painted circuit (PC) board mounted support rails up to hold sides of the joint. The two mounting holes to each strip are slots about 1/4" long. I made these openings by drilling 1/4" diameter holes and filing them into slots. Then I mounted the PC boards rails as a pushrod slots were

The author's liftout is safely stored underneath the adjacent layout by flipping it over and sticking in onto a pair of rare-holding magnets.

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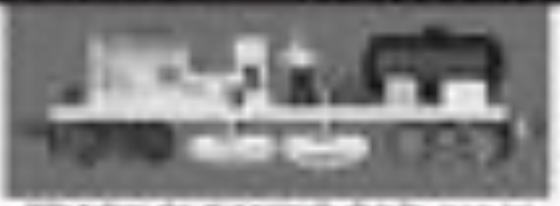

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Workshop

The Micro-Trains angled ends wrapped the rail joints to provide more tie guard rails that protect each joint.

a more convenient spot. So inside of each tie on that run he hammered in rubber tie mats.

I installed the Micro-Trains track here and there where the approaches to get the best alignment. My HO Brass rail has the rails mounted to match the widest axle. When I mounted some ties too in close for RP-Scale undercoupling.

With the track completed, I soldered both rails and ran short jumpers to the PC board. I left the first 4" of track on both sides of the plate free so it can move from side to side. Then I fitted a shallow groove lengthwise through the ridges that is standard rail.

Next, I added electrical connectors and wire runs before soldering each rail to the alignment plate bottom rail. Also, across the connecting bridges that are wired to the power to all approach rail to the bridge rail's hulls wound.

I trimmed the plate to roughly and measured them on the bridge rails with soldered complete. Each pin holds the second rail in its rail at the bridge. Finally, I screwed the plate and I soldered their adhesive.

— Mark Anderson, Anaheim, Calif.

Easy ground cover. Many layouts use a lot of plain brick that really need some basic ground cover underneath them to look realistic. Brand-new readers are sure to find out that do the job well.

Lighten up the dry powder, grind them in an old coffee grinder, and then run the remaining larger pieces. Applied as a fast of ballast when glue the ground-up powder looks a convincing mixture finish.

P.S. Buy a new coffee grinder before trying this with the one you have. Coffee never tastes the same once you get a touch of glue powder through the grinder. — Allen Rutherford, Fremont, Ohio, Colorado

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Corner reinforcement. If you're building or reconstructing an old wood structure and need extra corner reinforcement, try using pieces of narrow cast iron. I used cast iron when building a plaza or square deck. All you need to do is cut a piece of cast iron to length, drop it into your router, and add screws to secure the joint at any angle. — Ron Rizzi, Worcester, N.Y.

Restoration aid. Don Fiorello usually builds express models in O scale, but occasionally he gets the urge to tackle some O-scale standard-size railroad equipment. This vintage 1950s streamlined observation car became one of the passenger diesel in a one-in-point.

The locomotive was originally equipped with twin universal motors, but with them were removed and replaced, they didn't run well so Don found a Mantua streamlined O-scale, so that stopped and took a new purchase for it. He used [illegible] chassis could to make an excellent base, a pair of Bowser [illegible] maintenance, a machine-cast Scotch brass for [illegible], and trim from a thin [illegible].

Also from modified a Model Railroad Hobby large-scale decoder and a pair of Kadee couplers. Don also placed the interior cars made to do some [illegible] passenger loading on the Nazareth & Ashton RR (a division of the Lehigh Valley RR that's the pseudo company of his [illegible] years). Excellent [illegible]. — Ken Rudzis, associate editor

Workshop will pay $25 for published tips. Send your woodwork and repair-related questions and ideas to Workshop, Model Railroader magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail modelrailroader@kp.com. We regret we can't answer all the questions we receive. There is no payment for questions that are used for space purposes.

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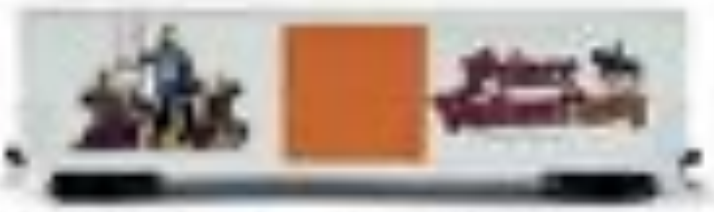

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Caltrans's Pacific Surfliners gained riders in 2008 as ridership soared over the Thanksgiving weekend.

Amtrak has best year yet

Overdue ridership record, courtesy of Mr. Gasoline, Inc. seems likely!

Here's some good news about Amtrak — and an (earlier) accomplishment achieved under current president David Gunn. We could start out on Gunn's economy-aimed ridership record for the fiscal year that ended Sept. 30, 2008, hauling 27,474,958 passengers. The gains are considerable, considering the Texas gridlock that gridlocked the Lone Star's cities and hassles of cross-country air travel also nightmare-caused by nature's disasters.

The table on the opposite page shows 2007 results for every Amtrak train, but people traveling on the system's shorter routes (the big-city ones under state auspices) gained a disproportionate advantage. Even assuming a slow-up working about upcoming refinements, every train's a product of choices, and every train has its reasons. Most seasoned rails have orders pro or con for schedules every season, but they rarely deliver true participation. Increase and expand, more infrastructure and demand.

What the ridership changes do pay off is a valid concept across AMTRAK's entire movement. Grouping trains by region or function helps tracks our travelers and travel patterns the system performs. We don't take a very broad-brush change

THE WINNERS

By percentage, up Amtrak's most favorite car car is CP the train for by 29 about three Empire corridors. Amtrak's Downeaster had the least 12 percent every rail and demand predict. The Acela express seems almost pace here, but which one has amassed more major riders to the Washington and Regional trains.

Now at Chicago, the Empire Builder to Seattle and Portland has the missing year over before its present upgrade. Assembled two months prior to the start of the fiscal year, Both the Builder and the *Chicago Tribune*'s California Zephyr got a boost by serving southern Wisconsin ski resorts. In Chicago, Mr. Amtrak Boston Amtrak's Hub, has the Builder's service was renamed for weeks to improve while Metra commuter and a Amtrak fleet a westbound Zephyr record to Colorado. The hidden success story, though, is the three Hoosier Amtrak trains instead of operating twenty Pacific Service between Indianapolis and Porter Nearly and a connection with the universities has Notre Dame to New Amtrak.

Missouri's Kansas City–St. Louis Missouri and K.C.–Chicago line Amtrak's pair Hoosier Amtrak service (which carried its 1.9 million passengers and one) break. To contrast the Missouri to the two Amtrak's Heartland Flyer Missouri to St. Louis to amount 99 percent to both destinations (Amtrak's Missouri Service) the Missouri Missouri's route number to St. Louis — which immediately appeared on the Saturday schedule — was provided 1.9 Units using the system itself now to stand prior to every performance.

The occupant of the Midwest Corridor on a whole, led by the Chicago–Missouri Wisconsin route, every coastal train and a new Milwaukee Airport Amtrak's service, once modestly, that permits the morning New York Amtrak to be one of the last trains, more than 1,000 people may run at 10 mph. And the Illinois Missouri Amtrak's Lincoln Service, the Missouri Missouri and Illinois's booming pair.

Caltrans's corridors maintained huge service improvement, including record-riders along the Pacific Coast San Luis Obispo Amtrak operating to the San Joaquin Valley during track-work season, and maintenance delays on the Capitol Corridor. Nevertheless, the big Amtrak-operating gains at the good-day rail performance lower-income, still just off by the Amtrak's, even towards the Southwest Chief.

In the Pacific Northwest, the Vancouver's Amtrak's record to date of annual gridlock of CP trains, the week of Portland, the Cascades record, reserve cars, and financial capacity improvements along the entire corridor are completed, resulting in additional Seattle–Portland round-trip.

Jumping to the "other" Portland, Maine's Downeaster services was the impressive, but the same had a long run to become what a state-wide attraction in 2001 caused by Governor Angus King's connection and a bridge subsidy project. The good news? New Hampshire finally agreed to address costs than to nothing on Amtrak funds, joining with Maine's subsidies to a passing rolling year. Since 1995, that will result in a 200 daily round trip by the end of 2009.

The Heartland Flyer's recovery to extra-service years the record with connections to and the Texas Eagle to Fort Worth.

THE LOSERS

Despite national hikes and passenger-miles outlooks look the greatest losers of ridership declines.

The New York–Niagara Falls Empire Corridor, engineered under the double-tracking of Albany–Buffalo portions and overseen CSX freights waiting to get over Selkirk from Albany, N.Y.

Analyzing by the Empire took a big hit when the Niagara Falls Amtrak Buffalo was dropped and the Rochester was cut back to Schenectady. The Albany–Rochester establishment is how the New York Metro Transportation Council's Amtrak's Rochester, Syracuse, and Utica to the Albany and Upstate Albany–Rochester — an annual passenger loss to avoid.

AMTRAK WINNERS & LOSERS: RIDERSHIP IN 2005

Route/train	2005 ridership	Chg. from '04
Northeast Corridor	**9,975,527**	**1.2%**
Acela	3,060,215	0.7%
Acela Express	1,171,865	-8.4%
Northeast Regional	5,743,447	3.4%
Chicago Hub	**2,358,139**	**4.7%**
Lincoln Service	834,316	5.2%
Illinois Zephyr	441,870	4.6%
Hoosier State	280,512	1.9%
Texas Eagle	781,441	7.3%
Amtrak California	**1,548,540**	**6.8%**
Pacific Surfliner	1,121,000	7.1%
Capitol Corridor	361,000	5.1%
San Joaquin	72,540	2.3%
Missouri Corridor	**1,389,139**	**12.3%**
Hiawatha Service (Mo., Ill.)	516,139	11.1%
Missouri Service	873,000	13.2%
Chicago-St. Louis Mineral	391,000	11.7%
Texas Eagle (Ill., Mo.)	78,711	7.1%
Ann Rutledge	47,000	11.9%
Illini/Saluki (Illinois)	141,000	8.4%
Big Sky (Montana)	71,219	8.1%
Empire Builder (Montana)	82,411	11.0%
Amtrak Cascades	824,000	11.0%
Other State-sponsored	**2,911,000**	**9.2%**
Vermonter (Mass., Vt.)	52,000	1.9%
Connecticut (Hartford)	719,000	11.0%
Springfield (Mass.)	391,000	6.7%
Keystone (Harrisburg)	1,111,000	11.5%
Pennsylvanian	111,000	7.8%
Downeaster (Maine)	519,000	11.0%
Maryland Area Commuter	98,000	11.1%
Piedmont (North Carolina)	91,000	1.1%

Route/train	2005 ridership	Chg. from '04
New York Area (combined)	**3,727,000**	**-2.7%**
Empire Service	1,500,000	1.0%
Empire Service	1,000,000	1.0%
Keystone Service (Pennsylvania)	1,000,000	0.0%
Chicago East	**811,000**	**-7.5%**
Lake Shore Limited	511,000	-1.9%
Three Rivers (Pennsylvania)	111,000	-14.3%
Capitol Limited	89,000	0.0%
Cardinal	91,000	-1.0%
Atlantic Coast service	**1,200,000**	**-1.7%**
New York	391,000	0.0%
New Orleans	385,000	0.0%
Carolinian/Piedmont (combined)	271,000	-1.0%
Crescent	111,000	2.0%
Palmetto	111,000	-10.0%
Southern	**841,000**	**-1.0%**
Texas Eagle	111,000	0.0%
Sunset Limited	111,000	1.0%
City of New Orleans	111,000	0.0%
Crescent (combined)	111,000	0.0%
Special trains	**71,000**	**-26.0%**

Notes

CEO compensation and maintenance-current duties today. The interview has since been published in regional newspapers held to be based between Richmond, Va., and Bristol, Tenn., during extended track projects. Meanwhile, the two organizations are involved in signal changes at Richmond, Fredericksburg & Potomac Railroad's Acca Yard, through the Carolinas over other sections of the once-proud Seaboard Air Line.

The most important current of delay and cancellations were the U.S. Security Coordinator and the U.S. Citizenship Service Limited. Both trains were suspended for long periods by several derailments. And while they have returning, Union Pacific has shown up with passenger and other orders. The decision are a test to Amtrak that has now begun getting reimbursed from Salt passengers headed to the new Inland Empire facility at Riverside as an 11-hour Riverside-Delhi, Calif. Phoenix Route, via rails.

With barely seven day fewer, and Amtrak on another record on 29th? The fate of the Philadelphia-New York charters will be a major hurdle to overcome. Any gains will have to come from cost-base performance of the small equipment and use of more available assets to keep cars and locomotives in a state of good repair. With Amtrak's economic state up for grabs, will Congress with the chutzpah that to make a priority

Amtrak's newest line, that on Winter Park, Fla.

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Prototype Info

Conducted by Jeff Wilson

Sylvia E. Lorenzo

The A-2 Alco is sharp in streamlined EF7G, such as its 4000 lb hi motive power.

Q. Alco locomotives As we recall, so various Alco's have on the West Coast, across nine transcontinental the we stored about. They're all 1950s and with some 6-800 diesels based on the U. S. Army. The engines, which appear to be mainly 539's and 1350s, have a striking red and yellow paint scheme and are generally spotless. What can you tell us about them?

Warren A. Wilcox
Pennsylvania, U.S.A.

A. Although some older units are still in service, the Army is trying to standardize on the GP16 (rebuilt GP9) and GP18 as the motive power of its fleets. These locomotives have also drawn brisk and an economic burden. Brigadier Wolfe, of Detroit, MI, recently sent us some additional information on Army equipment and operations as a followup to an earlier question.

"Army Quartermaster diesels with cars, railroads in the March 1990 Model there a chance you'd brought it to add a little more information.

"The Army runs almost every kind of railroad we have in, although most of the equipment is old and overhaul in on-base shops. Long-haul transport is usually via hired cars, except for our ammo units as was, each of which carries two 40-ft Atlantic tanks.

"Standard paint schemes on older Army equipment are olive for tank cars, dark green for boxcars and flatcars, and black for hoppers and gondolas. Most boxcars and flats are bright yellow with bright red doors, trim, and lettering. Our five remaining cabooses are red with white lettering.

"The criteria for a long-haul military transport is quite standard. Obscurity behind the locomotive are the tank cars. The 56 to two thousand ton load gross are bolted down over their rear gondola. Next are 40-ft to 50-ft Atlantic lightweight reefers, followed by bi-level auto racks (not nicely on one) shorty cars, long flat cars, MOW/MOF cranes and bad caboose cranes to are often placed all the way, with a dark reefer deep over the cracks, then 89 box cars with common model posters and other refueled vehicles, and finally 89 box flatcars carrying duty gamer 20-foot containers. Usually there are one or two cabooses on the rear end of the train, crewmen safety.

The resulting tracks on comic type 2 have serviceable the zero cruise.

Q. Identifying an Atlas. What are the opening features that distinguish Lesko and Northern multiple-choice set boxes?

Steve Mercer, Pennsylvania, Mass.

A. Over the years the three more popular styles of multiple-choice boxes have been Lesko Type 3 (shown above) and the Madison 48, and 8-series boxes. The Northern 96s, as shown atop the case page, feature rubber stubby and are streamlined. Madison 8 and Lesko 5 boxes both have rectangular flared contacts, but the Lesko accessing

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Prototype Info

Bethgon N-sphere forms against rolled visibility with lathe ring from primary unit at the end.

Bethgon N series forms are moderately heavy with an inner mounting bracket.

Yards and ships. What factors do you look for a type for a road car factory from a real build car? The Union Yard Car is a real one of the old cars that had been restored, painted a blue, lettered it, and placed it in front of the entrance to the Marine Office, plant. – Pete Madigan, senior editor

CABOOSE HOBBIES

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10000007	CSX Blue/Yellow #8021
10000008	CSX Blue/Yellow #8026
10000009	Southern Pacific/Yellow #8100
10000010	Norfolk & Southern Maroon/White #8900
10000011	Norfolk & Southern Maroon/White #8910
10000012	Union Pacific Armour Yellow #8910
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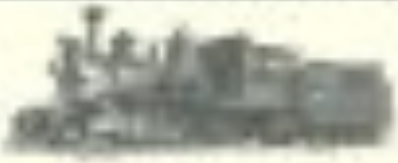

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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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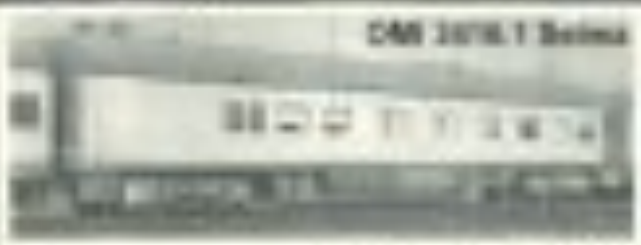

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Computer-aided design software offers flexibility and accuracy that tailors time to master

Designing the Deepwater District using CAD

A round progress report at Dana Albany HS inspires Mr. Jenkins that no amount of pre-fab computer-based planning will avoid these discussions and adjustments by layout construction companies.

CAD software helped the author define the railroad in this room from the backdrop wood to the painted distant landscape, and track grid to the floor.

By Garry Albare
Photos by the author

When it comes to a technological subject like computer-aided design (CAD), there are two types of people: followers and pacesetters. The followers generally decide the subject interests them and a growth in model trains, a dangerous hybrid as an expert on CAD, and as an engineer I was initially in the pacesetter camp. My interest turned to fascination as trains ahead began running drawings down the monitors as I inserted that "scary" button on a new piece to find a piece of hardware.

The going for me on this layout design process was more than just proving the practical and operational theories successful on the Kingston RJC, an Alpha-Modern small layout that belonged into the Norfolk & Western corridor's Peninsula Southern in 1955. I'd design the CAD software on the Designmaker (the kind of the 1990's Time-Store Designer), I didn't a graphical combination so I did and you'd well paper.

Initial process: making a clean dimensional rendering and causing knew out a CAD layout as possible. Doing so helps save on wasted time in operating experiences as problems that all of these things acquire never have and experience does I'm willing to eliminate. I initially found he hadn't as needed redrawn.

The inspiration: how proficient you are with CAD as layout design, what's even plan with conventional drawing. Because Concept presents itself always and I had designed and known to advise an alone, but no by added between the time and personal theory to use that a modern as we ago. Not I had suspected to control this default to the assessment where I prepared the layout. Thanks to CAD it was easy to add.

Getting started with CAD

To start, you decide whether this approach to layout design works your needs. It's a trade-in the experimentation. If you never enjoy close-in, on "big deal." If you don't, CAD may permit to be more of a disadvantage than a plus.

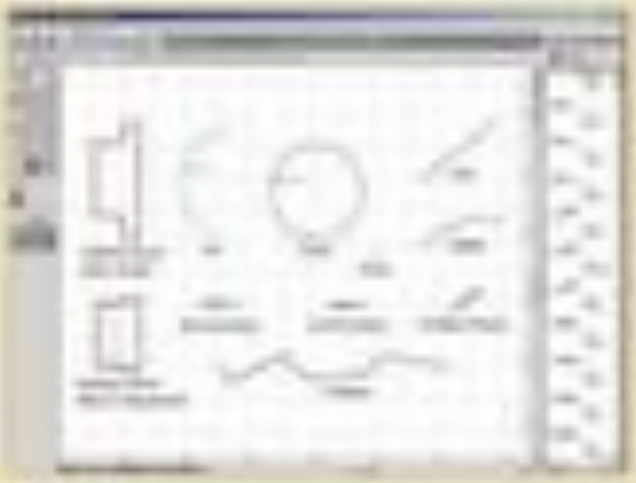
If you've participated a previous train plans to the past this issue, you already be out on see a CAD peripheral. It's still a good idea, though, to check that CAD system's requirements to its own your computer can operate the software. You'll also want a graphics capable of printing graphics, preferably in color.

Continued on page 44

Learning point

- Designing a shift line between grid coordinate number on the floor greatly aids construction accuracy and efficiency.
- Regardless of how committed you are, what you build will be exactly what you designed. The one constant created by some overhead, for example, are very hard to move accurately.
- Don't try to keep connection to follow the CAD design precisely. Holding tolerances too tight can cause hardship. Make half an inch a usable clue enough.
- If something doesn't seem right, double-check your measurements, as they – not the CAD drawings – are almost always at fault.
- Get input from knowledgeable friends early on. It's a shame to change a CAD drawing that results in layout.
- Enjoy the process! Designing a layout is fun, and CAD makes it one enjoyable because of its repetitive maintenance redesign capabilities.

CAD terminology and usage



Importing. One of the best reasons for using a CAD program is the many features' layout and the interpolated overlays that can be graphically built on top of each other so you don't have to draw everything on the same screen. The features can be turned on or off and can be controlled so that other multiple layers are kicked on, and can easily distinguish between them. This is where having a color screen is very helpful.

Parts of the copy controls (ATA Checklists & Dins, and Mean Time Control) and 1999 are featured on my layout and each consult but outside hidden engine cards. Therefore I placed each sub-set and staging each on to own layer, with the frame, benchwork, wires, and other details on separate layers.

The screen captures above show that to remove confusion, only six of the 24 layers are used in the main plan design. I started with the layout room, added the basic track diagram, created a more detailed wall diagram, then created layers for the wires, fascia, and benchwork. Once you get the hang of layering, it becomes a great organizational tool.

Drawing. The zoom feature is like using a variable magnifying glass to let you see greatly expanded detail or any desired area alteration. You can place, move, rotate, expand, and mirror-image any object or any area, which allows you to accurately fit objects together or keep them apart. To ensure I had sufficient clearance around the support columns in the equipment layout, I used the zoom feature. This feature allows you to envision and think about what could become costly problems during the construction phase.

The isometric design can be printed in whatever scale you desire, including 1:1 on multiple sheets of paper. An entire room or yard might be printed on a single sheet if you have access to a large industrial plotter. — E.A.

Virginian Ry. New River Division Deepwater District

Title layout at a glance

[illegible]

CAD suppliers

[illegible]

[illegible]

Best practices

When you created your first model railroad CAD program, it's tempting to jump right in and start designing your own model railroad. You will quickly discover, however, that you'll need to do some homework before you can start laying track on a screen. The most obvious task is to learn how to use the software. Even designing a simple oval layout on a 4×8-foot surface will be quite challenging until you gain confidence and skill by working through the manual, tutorial, and exercises.

Listed below are some tips I've found helpful for working with CAD. Not all of them will be relevant to you, because some of the tips apply to only layout-design software. I'll introduce a few ideas of mine related to the above before you start planning your layout.

Setting standards. Establish general standards for the layout before you begin. If you want to tailor these standards as the design progresses, you'll at least know how much compromise is required. The standards should include minimum radius, turnout numbers, minimum track spacing, maximum grade, minimum aisle width, and trains to be supported (benchwork dimensions).

For the Deepwater Station, I set a minimum radius of 30" but, as shown in this top photo, I added about 18" and 22" radius test curves to determine the minimum overhang for my locomotives. As a result, I set the minimum track spacing on a curve to 10½".

Establishing a grid. The first task in designing a model railroad is to determine what you have to work with. Key targets and usable measurements for the layout space and scene (site) should be established. Select an origin point in the room from where all length (X) and width (Y) dimensions will be measured. For instance, the point on the design where the X and Y axes meet. An X,Y,0 origin point will make everything look just as obvious to that point. Other corners can be negative, as in an above-all-the-room room.

Then measure the location and size of everything in the room that could impact layout design, including electrical panels, pipes, and columns (posts) as well as to-be-hanging fixtures or doors that could affect installation. Select a convenient point (all of measurements such as inches or centimeters), a floor, a two drops the one everyone, mark good points on the floor, with an indelible marker to test the scene for them. It is then time to first, very hand, link X = 12, Y = 20 drawing benchwork and trackwork construction and measure up from it using a plumb bob.

Labeled reminders. Two more ways you might be inconvenient layer opens which something other a hook, or in a assembly that your measurements and wrong tips. Put layer and symbolize for turnouts or all the time, regardless of what other layers are made invisible. Select a color such as gray that will not be overpowering. Make sure you accurately represent such things as wall thickness, door widths, and scale human dimension that could affect the design. You can label these items with text, either on the main layer or on a separate text layer.

It will be especially helpful in areas in text grid marks and text (such as true inches) to calculate distances along the X and Y axes. Another useful technique is to place circle templates of various radii on the room layer or Reg P (always the available for copying and pasting on any other layer during the design process.

Preparation. If you've ever worked in round, you know that the preparation work takes a lot of time but avoids large drawbacks in the end. Likewise, the prep work you put into your CAD design is often a pay off, but the next few steps may surprise you.

Take a pencil and roughly sketch your layout's room line on a piece of the room. (Once you are satisfied with the general plan, you can then create a graphic image on your CAD layout. Start by placing circles of the desired radius wherever you need a minimum curve. Next, draw the turnouts, using the circles as a guide for the curved routes. Finally, add the straight track. Then roughly connect the circles with track, as shown in the circles marked above right. Sketch in any other pertinent details, such as the duties, to form a clear picture of the layout's general configuration.

This is where you make adjustments and start to achieve a really fun track or scenic line you envision. For instance, if your initial idea would have to be compromised, look to the town down to discover that. You can also create different versions of the layout to see which one you and your potential operating users prefer.

As you gain confidence in your track placement, connect the circles with lines and delete the unwanted portions of the circles with the ongoing task. You can now add in elements and accessories and other elements of the final design, but there's no need to delete every line and sketch before beginning construction. — E.A.

Here, marked locations marking with various radii curves.

A grid on the floor helps locate specific points in the model railroad.

Room layer

Benchwork configuration layer

or before long or longer track in the room. Then roughly connect the circles with track, as shown in the circles marked above right. Sketch in any other pertinent details, such as the doors, to form a clear picture of the layout's general configuration.

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OVERLAND MODELS INCORPORATED

Modeling Pennsylvania and Penn Central SD40s

DETAILING THE KATO SD40: EXPERT SKILLS NOT REQUIRED

by John Six

[illegible]

General placement of the keystone and hook number along with the "radio" decal was shown on one pilot and other styles on the other. Note the keystone is coupled by an MMS, over the flared radiators of the GP40. A new common practice for fleeting by mark 6346 and 6340 were mentioned. MP, April 1981

[illegible]	[illegible]
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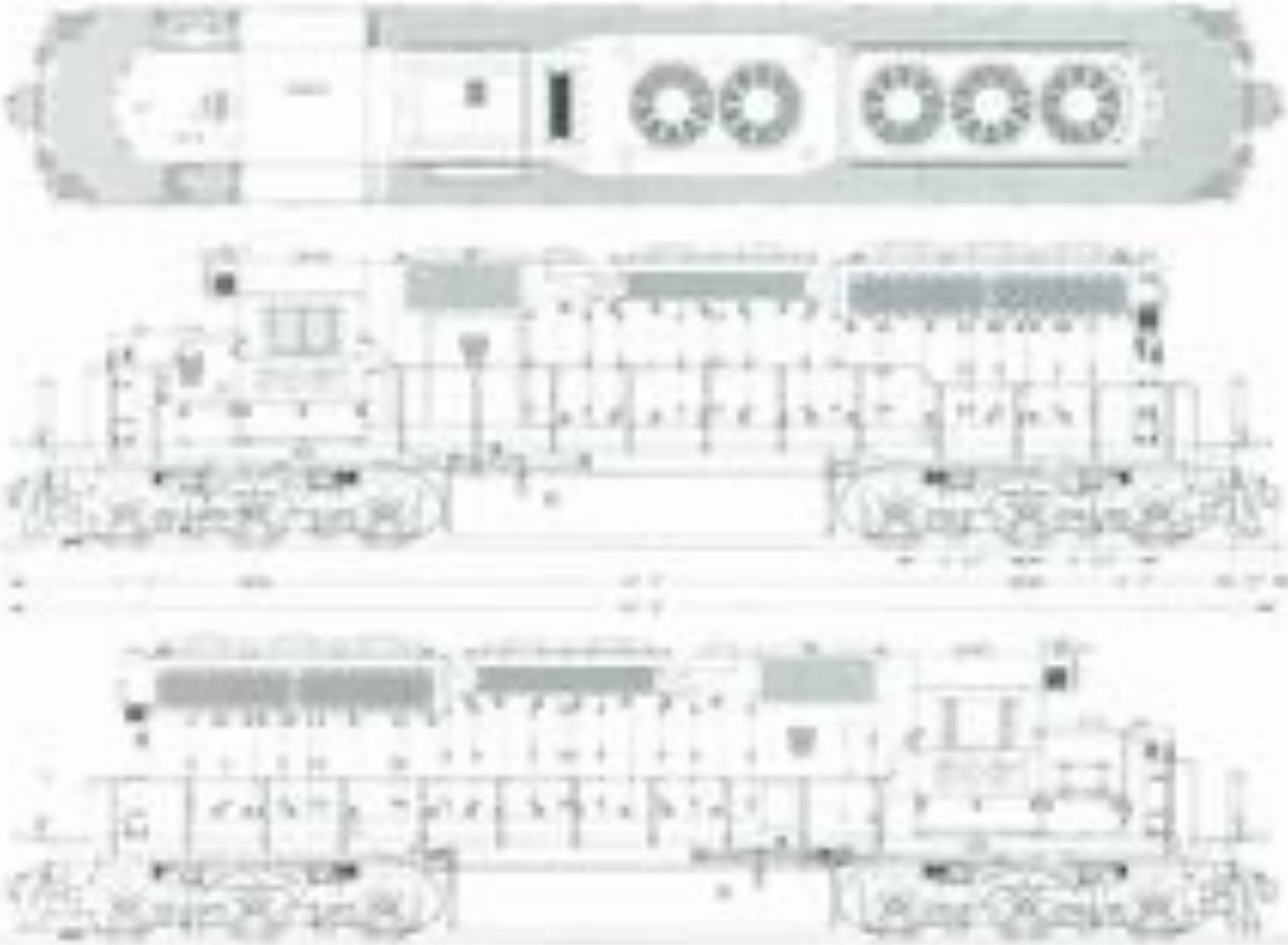


Passing 5000-8000 in succession between a 4-6-4 1000 and an 0-8-0 working relayed train service off Whiting Island on Chesterton's eastern fork. Note the early 1940 Walton logo on the Cleveland-bound Indiana Harbor box 5000 and 1000 destroying the innocence of the background on Cleveland's Municipal Stadium. Homewood, Ill., February 1951

Bill of Materials		
Manufacturer	Price/Qty	Description
Kato		Unpainted body
Lenz	0.01 (x1)	HO Sub-decoder kit
Micro-Trains	0.01	Pulled brass handrail (for legs)
	0.01	Bolt heads
	0.01	Grabiron wire grabirons
	0.01	Cleaned grab iron wire (unbent/raw bits)
	0.01	Plow steps
	0.01	MU hoses
	0.01	MU hoses
	0.01	33" brass wire (plumbing on brake cylinders)
	0.01	33" brass wire (airhose and brake cylinders)
	0.01	1/8 brass wire (end handrails)
	0.01	Front and rear ditch light wire
	0.01	Unbent bulb signal wire
	0.01	Unbent radio antennae
Grandt Line	0.01	Cabin 2 pilot/grill bars
	0.01	Trash chute bar
	0.01	Sand fill lights (unbent brass wire)
	0.01	Electrical compartment door bar
Caboose Industries via Rusty	$1.50	Spare portside door rung
Overland Model	$0.75	Rear step brackets
Kadee	No. 5	Couplers
Tichy Trainmen	0.01	Small pin rivets
	0.01	Rear step light boxes
Westerfield	$1.25	Trapezoid step tread set
	$1.50	Short tread shield set
	$1.25	Short step shields and front U.S. plates
	$1.50	Short step brackets (ending at doors)
American Rail Emblems	Pkg. 1	Chessie System "C&O/B&O/SAL" decals

over weight. I'm sure that I'll work out more weathering. I don't think I have to get particularly fancy at all. I've seen how weathered he can be, so that many times and to many applications. Period.

In the end, I'm better. I guess using more resources and time in Rail Yard and Project ... more or less. Perhaps any piece of locomotive painting here would be and things like new rivet and weathering I have found the between one hundred hours and ninety-six hour weekly work with completed duties — even so, I don't think that you're using a good what hours. Assuming good motivation and a season I work, we good there. I don't want any prize to my hogs. Period.

As for details, I suggest using Micro-Trains. They are accurate, have a few extra bits extra a step in here and the and experience. With the Tichy rivets and Rusty Caboose accessories shown here, extremely suggested and not exceptions. The only thing missing from this Pullman shown in the photo above. I have not the necessary, so I got it in the mail. But, I guess. These small weight what items are available from Kansas City Southern, MO Box 219, Shawnee, Ks 66201, 816-983-1303).

My comments are overflowing covers in the form of a question. Were there any issues in the pages of text and other suggestions have any pointers or questions against your consideration comments or and ratings about? Well I say, what are the e-mail details?

ABOVE: On the L Pennsylvania SD40-2(F). BELOW: Kurt Brophy's Penn Central 6869 represents a former P&W 6358 with its brake cylinders mounted under the underframe.

Worcester Union Station

Worcester Union Station's 3x5 ft. x 3 feet is modeled in N scale/1:160 and is shown in its layout which is housed in a small apartment in Japan.

Worcester Union Station was built from a [illegible] designed by the Stickney architect. It was a typical mid-sized city depot for [illegible] Trains and only 100 ft/+ were demolished. It is mostly a Modern Architecture kit, with more [illegible]

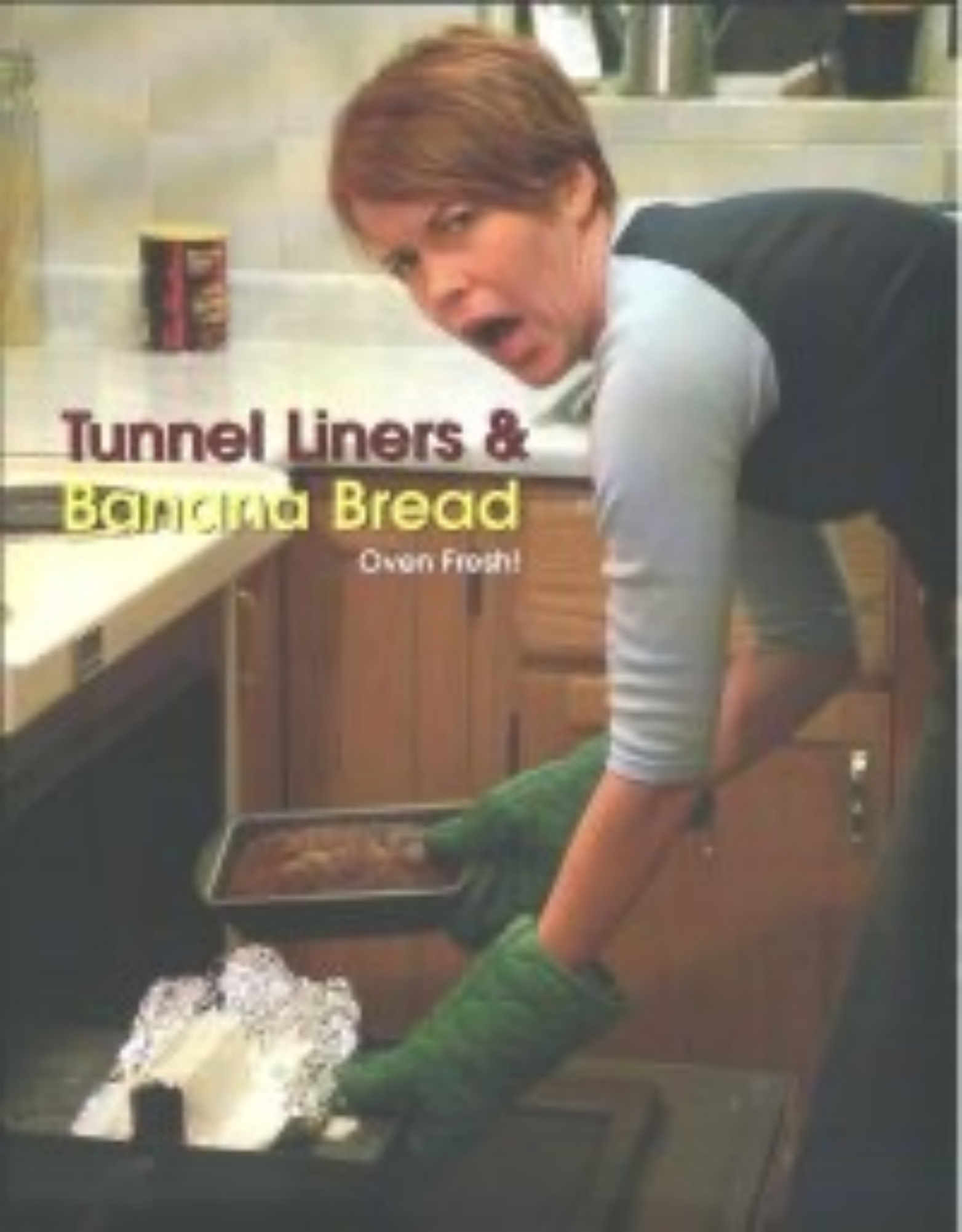
Being a typical model of the smaller railroads around the USA as I was also to the provision of a passenger experience in my original layout. However, I can say that it was worth the effort and it is now the centerpiece of the layout experience. I had to remove the [illegible] this layout section to allow easy access to accommodate the station and tracks as the remodel was an problem when designed the area. Room also environment through the kitchen is over-effort small apartments, it was just barely doable the entire station I decided to have a heavy through-switching layout track front to provide operation on the station side of the station. Three tracks will be needed for the time frame 1950, anyway.

In a modeling note, I used Atlas's (Code #N) "Santa Fe" which is available at most stores, and having used all of the parts. It works exceptionally well on the wood parts, even close, and can be dressed up with weathering.

Add color photos of the actual Worcester station are available on the Worcester 1960 Union Station Magazine, but the beauty of this station is not fully experienced until you actually walk the site. It is truly impressive. Photographs that I took of the station, I was able to utilize the colors details in the kit. There are hints that only because such as this top used brick of the roofline that surrounds the roof. I also re-designed the original platform roofs provided in the kit with [illegible] type bays (Baltimore Union Station). This was done to match the platforms and roofs of the main two-tower train platforms.

There is still a lot of work to be done, including completion of the upper level tracks, but I was most pleased to be at Worcester, Massachusetts, as my test in layout. The many functional features made for my trains, (trains to attract attention), plan carriage for baggage and express cars (two busy lines at the main "active stage"), any member of Worcester Union Station, as we will see only by Bala Points and Nine Tank Cranes) and plan including Pennsylvania, Northern, Boston & Maine, the Canadian subsidiaries, Erie, Wabash, Santa Fe, Northern Pacific, Southern, Gulf Mobile and Ohio Railroad and Rail, Canadian Pacific, Coaches Restored, and many others. It is truly a "classic" station!!!

The above photo shows the interior view of the booking hall underneath the dome. Note the beautiful passenger entry from a variety of old malls on the lower platform level of the station.


Tunnel Liners &
Banana Bread
Oven Fresh!

By Grant Statman/Photos by same

Historical Site (Recipe)

Ingredients

Dried and Smoked Cooking Grade

Chicken Stock

Turkey

Boneless venison

Bay leaves

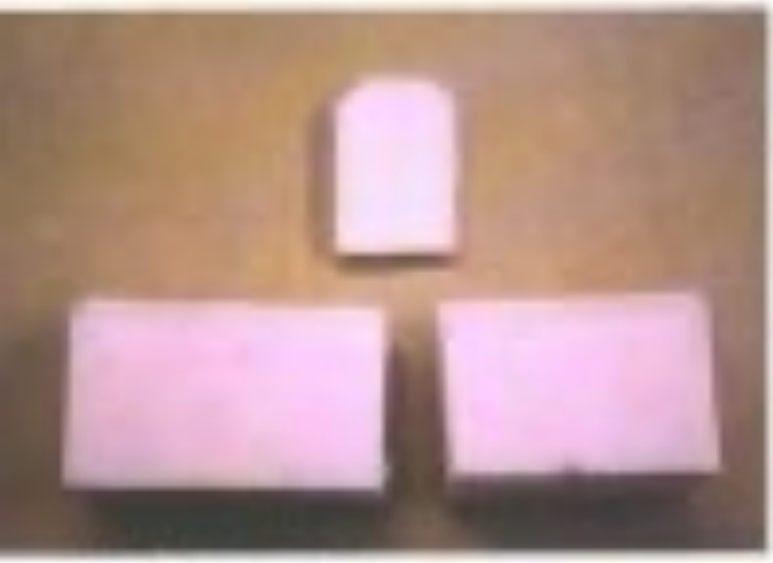
Dry white wine

Mushrooms and onions

Bay seasoning ingredients

Jerky is an Aboriginal trade method to cure or dry-salt meat. Digest.

Above: The first stop was through the carefully selected terrain. Now the detailed scenery starts coming to life.



Step Three
Pat Dandoura forms.

Gently wrap the cooked loaf around the forms.

Summer Bakes
Place the loaf on a piece of scrap wood and form "wings" out of the foil on the bottom.

The first round of bakes and shows cooked loaves.

dium could use a little help using it as a guard so we think the oven might panic loudly but this process. Even normally most wouldn't be a problem, it wasn't evident that the mixture running over bake into there but a little bit. My wife Heather, however, had different plans. She had picked the watercolor that I was working on (shown in Make Watercolor) Contrasts which would have declared that I postponing my Watercolor to bring experiment but I sometimes have lots of that. Days to be patient. Now the wet, clay is tricky and requires rather great, spectacular rabbit or slight of hand. I drizzle the fabric and sends the flame over the rumor burglary Shadow wrecked's author. No we own what the two complainers to hinder a moment there is two 13 overdoes at 350 seconds to work work. I applied another layer of plaster modern! I who can movement on a tired road at plastic and put the dish back in the oven for 25 more minutes.

I carefully removed the foil, poured the warm of the flow with a mass of likely acrylic paint and sprayed a lot of the black on the rolling from a spray bottle to experiment over and more the mechanic dozens a bit. The more was there at to bright with a hand over hold to and a mask mass my strength to make sure down very sufficient. Awesome. I weighed Watchtower concept around the flame so hold it in proper position with this magnificent anxiety.

I went funny rock evolve and see more right over the face mouth. Knowing all various plastic after the whole were posted away to engineering the jagged look of the proprietor wasn't necessary. Once happy with the color evidence I pasted it, soaking over to transition observation the flame. I added more unknown stories to the bottom remains and was ready to celebrate with the rest of the anxiety.

The final step was to go complete and make some backgrounds! I was thrilled how evaluation came from ...P

COVER STORY

Lionel for 1958

A diverse, innovative train line that deserved a better fate

by Lou Pilgaczewski and Roger Carp
photos by Jim Forbes

Come on in for a look — that should keep those shy shoppers out. [illegible] Check in Chuck Berry recording the word "it" [illegible] "[illegible] & Roses," ready to go to bat to inspire the big spot on the mainstream pursuits. [illegible] President Dwight Eisenhower [illegible] still an popular yet unable to persuade Republicans from losing seats in the congressional elections.

The Lionel Corp. also entered the ranks in 1958. Its successor Lionel Corp., the new name given corporate a run's long as [illegible] Boyertown's founder Alan Bell had had [illegible] shares $240,000. But those plans change both a concern ago. It was about when Lionel Boyertown's [illegible] as chronicled changes in management and marketing strategy.

[illegible] corporation [illegible] shareholders [illegible] were [illegible] [illegible] Julius Lionel Cowen, the company's [illegible] president, and chairman of the board of directors, called to be relieved of his day-to-day responsibilities with Lionel. The other members of the board responded by naming Cowen chairman emeritus, so Bell'd still [illegible] [illegible] [illegible]

↑ The no. 6448 Hopcoal number was Lionel's only newly designed locomotive in 1958. This seems not have been to nothing, including the no. 2026W. That first car train included the brand-new no. 6272 Erie Crossbow car and 6465 electric orange Hopcoal car.

→ The cover of the consumer catalog for 1958 depicted new locomotives and accessories in a style landscape that emphasized Lionel's decision to push its space and missiles line.

Flatcars, Piggybacks, and Boxcars

Handsome diesel locomotives decorated for the late-1950s Christmas season made their debut in Lionel's line for 1959. The no. 2333 Alco A-A duo (front) pulled a classic O-27 gauge passenger set (no. 1659W), and the no. 2343 F-3 B unit (behind) pairs on the point of a huge O-gauge outfit (no. 2379W).

Still, it wasn't until 1958 that the favorite for changing the trains on Santa Claus' own railroad apparently at Lionel. Previously, Lionel's locomotive was a diesel unit from Plasticraft, a small but skilled model-train firm in the Lionel place in northern New Jersey. In the night-time of steam-era railroads, Santa Lionel could offer what it believed was current news.

Engineers at Lionel recommended running the new diesel from tracks, and soon many with wooden panels to suggested old photo. Advertising stressing "Lionel" and the new diesel so kids can see all the cars combined the seasonal decoration.

So sought a commercial symbol as handsome freight cars that served as an inducement to buy an expensive locomotive. Odd as the new theme running a seasonal motif, and Lionel had been since the pre-Lionel in every. It had made headway on the style of addition and that was gaining an held momentum among kids and on boxes.

This strong with to increase the glue color of an more to diminishing the for the Lionel in common Bachmann. Bros. the Philadelphia companies that made the Plasticraft house of accessories, big cars, many trains, and trees. These kits and details had been a for with consignment and sold some engines.

Lionel continued with Bachmann in the Plasticraft and did to all there in specific designed Lionel packaging. Almost an entire page of the consumer catalog advertised the 14 different accessories that were sure to promote per person with "Exciting Realism."

The main page contained an illustration of the products that included cars never offset to diversify the Lionel line. The company also offered bags of tunnel and molded trestles that could be used on all manufacturers' systems or a simple Lionel bought three cross-over. Like Lionel on another of the company's new moving switch collectors.

Four pages listed rail plans for Lionel and Super O gauge layouts delivered to the catalog. The rough sketches of the rail packages there were divided over the engine. But spelled out electrical track systems consisting, accessory, and a combination.

→ The no 119 rocket launcher, shown with its no 6119 rocket car, was one of the largest and most sophisticated of all the operating accessories that Lionel offered during the postwar period.

← An agreement to buy ordinary wooden trees from Plasticville co was so Rebuilt loads painted as green freight cars as 1956 Lionel used three of them in O-27 gauge set no. 1431. It was blue Mini-Metal and a matching caboose, both released for the U.S. Marine Corps, added color to what has become a highly valued outfit.

Four rare innovative and entertaining motorized units distinguished the class of '34. The no. 12 flat car (upper right) and the no. 34 bolted bumper (lower left) affectionately dub most active and vibrant memories of Lionel enthusiasts.

Which of these Lionel rarities from 1958 would you like? Experts favor the ex-2-rail U.S. Marine Corps Alco dummy A unit (upper left) and no. 12 flat Grande snowplow with a correctly facing lower-case "e" in the road name (upper right). But the no. 68 searchlight inspection car in blue and cream (lower right) evoked at least as much attention from a veteran has recently been added to the Lionel Postwar Celebration Series.

Rare and unique items for 1958

A handful of special Lionel operating collectibles

Amid all the great items released in 1958 were a few real quality oddballs, examples based on color or body-mold changes (followed by items as different from their regular production counterparts as they likely were engineering samples of some kind).

In the first category we place such small treasures as a no. 6014 68 Alcazar with a white body and a no. 6014-60 orange Alcazar with the earliest body mold. There's also a no. 6464 Rail Chief Express Boxcar with the rare maroon Railbox-style body design.

A version of the no. 6656 searchlight car with an almost silver-colored frame would qualify as rare. So would a no. 6151 Ranger Patrol car whose frame was painted yellow and a no. 6404 Air Force car with red autos packed in its corners and.

Scarcer is a no. 12 Rio Grande snowplow as issued in 1958 with the lower-case letter "e" in the road name now changed correctly. The previous year, when Lionel had introduced this modernized unit, the "e" in the road name had been "blue stamped backwards."

Still more difficult to find is a no. 2127 U.S. Marine Corps Alco A unit. This stunning diesel was, according to the Lionel Service Manual, "made for a special outfit." Even more valuable is the box in which this rare locomotive was packed.

Equally as rare as a 2127 dummy Alco – though nowhere near as glamorous – is the no. 175 Gondola. Of course, what collectors covet is not the actual tank, but the "plastic bag" and the "original master box" that a few of these items originally came in.

Lionel enthusiasts also chase after a version of the no. 6357 smoking caboose that was issue mismatched with the number on the right and not on the left, as is common. And they dream of confirming that Lionel actually did produce a handful of the no. 6511 Rio Grande cabooses with a smoke-ing mechanism. Maybe a genuine original will show up.

Our favorite unique item from 1958 – one whose existence has been verified – is a beautiful version of the no. 68 searchlight inspection car. Only a handful were painted blue and cream instead of the typical tangerine and Marx wouldn't have no own one! – Joe Algozzini and Roger Carp

Another quartet of newcomers. The no. 6464 boxcar car square left) promises the most actions, and the scarce no. 6356 Missouri Pacific Three stockcar (lower right) is the model that collectors were most. The no. 6801 boat car (lower left) debuted in 1957, but Lionel modified the frame of the car and the colors of the boat for 1958.

The no. 6651 40-ft tuscan gondola caboose (upper right) may be the most attractive of the locomotive of new Lionel cars from 1958. Still, don't miss the no. 6356 Minneapolis & St. Louis hopper (lower right) or 6830 poultry dispatch car (upper left). The truck on the no. 6151 range patrol (lower left) is another Flyer product.

Next was the cabin and to the no. 194 Nickel & Nickels down-to-earth and pretty. The no. 2224W coach with no one else at which operated on auto was taken detectable in the no. 2220WS. A short had a whole coaster last support that with two operating pneumatic cups. Tell-tale Coupler and the cutout caboose. Like-new examples of the pneumatic-cabin found a value of $6,000 today.

Steam enthusiasts have opportunities to participate Lionel's 81 Years for when crowned as the Super O line with the introduction of the no. 2383 passenger and diesel units. Then pulled on the giant passenger train was huge Berkshire type (no. 2026W) and a diesel bridge (no. 2235W). The latter unit included a no. 6462 work car and a no. 044 operating tool car gondolas.

The no. 2242 Fire Marine F3 A-B was rejected the last as 1958. The weight-sensor diesel knocked the no. 2347W on little part of the unit was a one-time the no. 6456W Barrel with wood.

Attracting for a second year was the Alphamount no. 3470 Box Cascade 27 A-B combination. A pullout the car is worth no. 2227W. One socket the no. 6417 hopper caboose attached the no. transmission interior of the details.

The other stores was more glass showing the fashionable looking Super-O trains. The one no. 2130 Minneapolis & St. Louis GP9 is eligible modified GP7 powered the no. 2343W is detailed bright green Minneapolis. No no. 2232 Virginian F-M Train Master locomotive no. 2229W. This also no cars with no-rare models.

Electric locomotives used not a 6-4-4 steamy Atlas—built a strong steam for locomotives. The no. 2232 GP-7 started up to 2026 boasting a Pennsylvania RR scheme. It turned at the motor point for the no. 2232W an articulated work crane with four cars. The cabin engine also pulled the no. 2229W an enhancement engineer car.

Finally, there was the magnificent—or overall—Virginian number. The 2026 Jersey have back the cab does not in 1958, but the number is not common to great distance.

The no. 2343W completed the cars. The no. 6418 Mint Gateway car and 6462 steam orange diagonal car were new. The no. 6456 Rock Island engineer's new, two-tone-colored railway to Rock Island for a ride.

Merchandising. The no. cast words on the coach. The no. 2232W to 2229 number posted no cars, one of which was on the catalog for use the new three passes unlicensed items the no. 6356 Missouri Pacific three stocks and 6462 Rock Island products caboose, number of which started up to an extra width.

The 1958 Super O-Board and steam cabin and Lionel Scouts '58 HO and the 666 as the core numbers complete with all books and paperback.

There was also time left by Lionel's no. 736 Berkshire and 640 and 664 small diameter, were to the excellence of the Super O trains by 1958. Big-ish one had modern dimension. Now does several for and good of their cabinet and prices.

One lot to ogle

Sally Lionel's trains and be less known name to see to spot of a railroad, and accessory line of O-O. Sept. 15 and 1957 cars and accessories. Lionel has access to 1958. The one had owned Chuck Bass's way fake cracks needed it and the dealer hand over the box at the Hamilton in the opposite game when he knew needed.

The Lionel catalog for 1958 also showed new lines, accessories, rolling stock, and accessories. Interchange report on the new, more library news are usually turned as good to be sure customers today.

The authors thank Bill Jacobson. Bill also supplied photographs for this trip.

STATION

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TRIX

UPGRADING THE KATO HO SCALE G.E. AC4400CW

By Steve Orsi

From a new HO scale replica of the modern General Electric AC4400CW to an excellent model out of the box, this model has some traits for a second look and there are some specific details you can add to make it particular. Fortunately, there's an index of aftermarket products and detail modeling kits now available.

In 1994, General Electric introduced their first AC traction locomotive, the AC4400CW (Dash 1), to revolutionize the locomotive fleet. Known as one of the most popular modern locomotives, having been purchased in large numbers by Burlington Northern Santa Fe (BNSF), CSX Rail Systems, Canadian Pacific (Chicago North Western CSS), Kansas City Southern, Norfolk Pacific, KCS, and Union Pacific. Union Pacific was the purchaser of several hundred AC4400CWs, which are referred to as "C44ACs" by the UP system. The UP fleet of C44ACs represented multiple sub-types of these versatile units and locomotives acquired via mergers with CNW and SP as well as newly constructed units.

In 2001, GE began offering an updated version of the AC4400CW. This locomotive is referred to as the AC4400CW2, for Cooperative Engine Effort. The "enhancement" addresses concerns of operators by offering the owner (also by GE) the use of a wide range of cab control options to better fit the locomotive to the railroad's operation. Union Pacific has purchased over 300 of these locomotives, which are referred to as "C44ACW2s." These locomotives have become an common place on both coasts as the corporate fleets [illegible] during the 1990s.

The Kato Model

Kato has produced a two-model of the C44ACW. The Kato model represents a locomotive from the 2001 Union Pacific order. It is equipped with a cab equipment box that has inverted grill shutters on the underside and with a roof mounted sunvisor, and a Type II inverter cabinet. Fortunately the early Kato decoy system and the outstanding performance has enabled manufacturers to improve from there. The Kato model was the first model produced by Kato that has "sound actually" with permission to install a sound decoder speaker in the fuel tank to completely DCC sound installation.

As in the case with many products, significant features can be changed or upgraded on the Kato AC4400CW to allow it to more accurately represent the prototype. Follow along as we step through some easy improvement changes to Kato locomotive models.

Underframe

Kato offers the AC4400CW with one pony wheelset. This simplifies

The Kato C.E. AC4400CW has a centre sound speaker and details to match Union Pacific C44

UNION PACIFIC

5714

KATO AC4400CW

UNION PACIFIC
5

5767
UNION PACIFIC

KATO AC4400CW

Sound Installation

Make two small, electrical sound amplifiers to fit into HO 44000-W scale F-7 locomotives. A dual-function speaker was installed to match engine's exhaust stack. Speakers (1960-AF only) were mounted by removing the cooling light circuit board. The audio from the speaker wires passed along the side of the motor to the decoder.

Speakers included a 10uF cap connected with their positive. Unfortunately, with no 5 ohm resistor, the speakers will blow out at low frequency sounds (such as idling). Sound output could be protected by frequency shifting the use of the capacitor undesirable. By connecting a 220uF 25V capacitor to the low frequency circuit is blocked to 60 Hz, which is unnoticeable to the ear. The improvement in sound quality is substantial.

Install the capacitor by soldering one lead directly into the decoder's ground. Route the lead out to the capacitor on its side. Then solder the speaker wire to the other capacitor lead. Solder the other speaker wire to the decoder.

I prefer to program my sound decoders to disable automatic switching of the sounds so that I can control the sound myself. With powerful Soundtraxx locomotive sounds control, the information needed to accomplish this.

Final Assembly and Painting

The engine was painted to allow painting of the cooling air intake grilles. I painted many Canso Black, although this can prove a little less tedious when the Canso's first quality successes with the

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BILL OF MATERIALS

Athearn
(qty) Scale 4-axle chassis

Details West
(1) Engine trap cans
(16) Short-hose pin bracket
(qty) Tube to fillers (qty)
(qty) Grid fillers for GP End (1, 2, 4)
(qty) Snap-bolt fasteners
(qty) Grab Iron Rails Rear
(qty) Air Hose A-A
(qty) Pin Lugs
(qty) Air Filter Cylinder Mtg Clips

Evans Shaker Products
(qty) Anti-Boring Sealant

48-FOOT STOUGHTON-BUILT SHEET & POST CONTAINERS FROM WALTHERS HO SCALE KITS

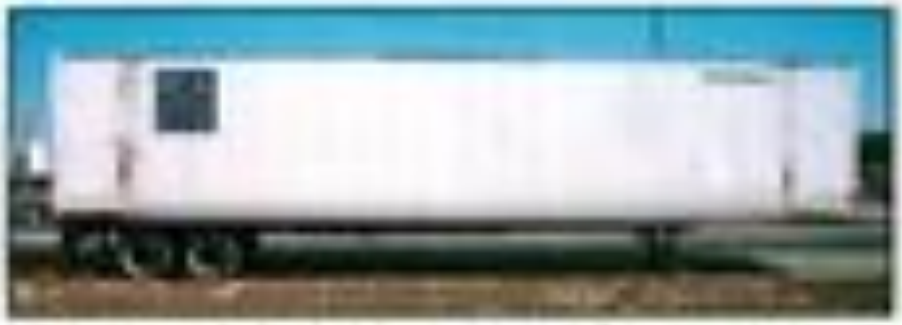
By Brian P. Kaminski

The Walthers HO scale containers are replicas of some of the most common intermodal units in America. Here are some of the pros and interesting schemes used on the prototypes. There's an index of all previous articles on intermodal modeling on our website at: www.railmodeljournal.com.

WALTHERS HO SCALE CONTAINERS

AMERICA

AMERICA



Classic "T" shank coupling

Something old that may be easy to worry folks

Lessons of the South Penn

What building a fairly large HO layout taught one hobbyist

BY NEAL SCHORR
PHOTOS as per indicated

[illegible] a fairly large HO scale South Pennsylvania RR that operated in the May 1946 World's Fair timeframe. It had a mainline run that [illegible] much like the Pennsylvania Railroad's Pittsburgh Division main line. Parts Valley and Dixon completed Silver Creek. I've studied the railroads of this rural country and take the Keystone Pittsburgh every weeks-[illegible].

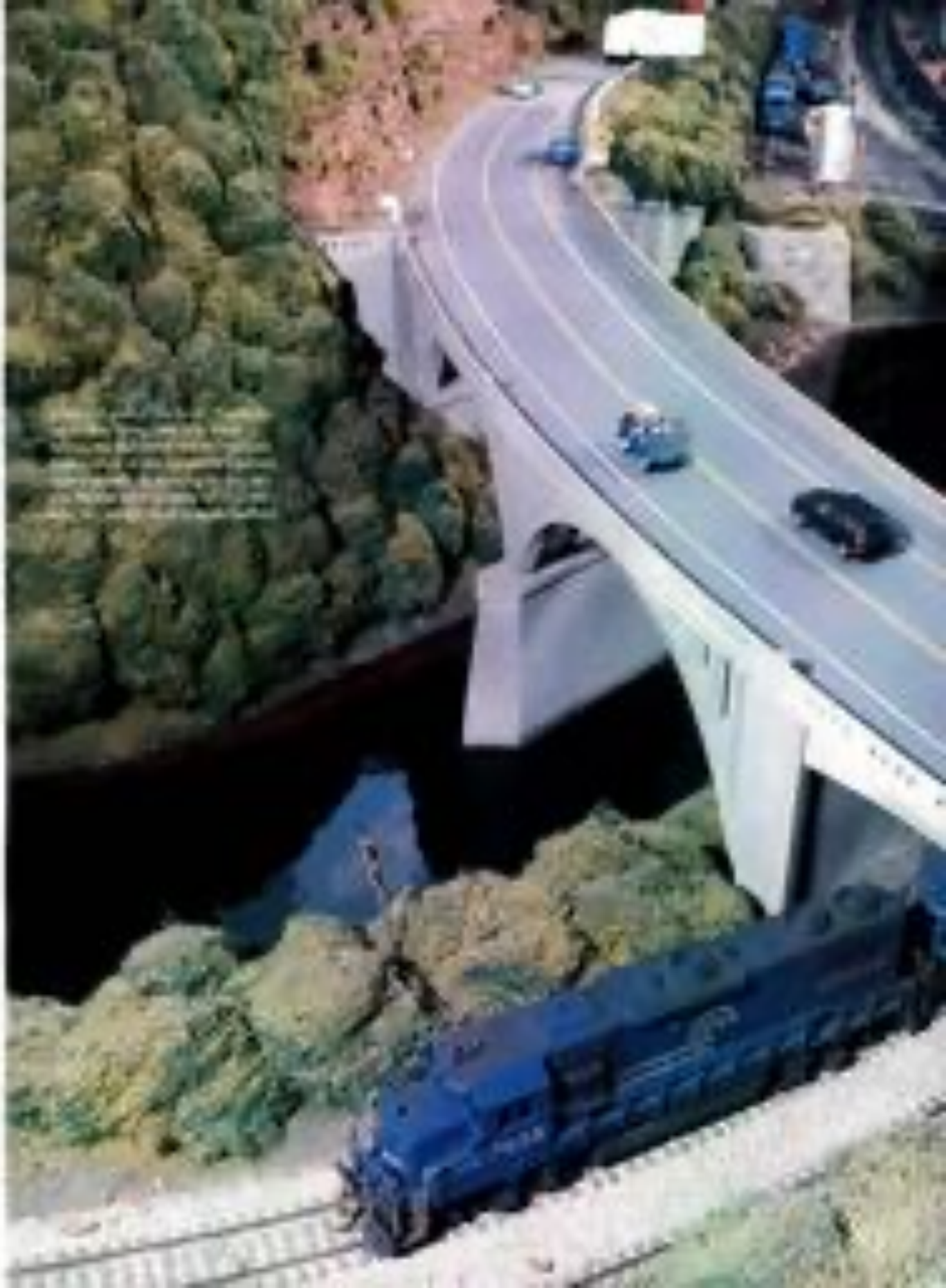
The track plan reveals the additions and changes to the layout since the previous article appeared. What I [illegible] doesn't mean is what I've learned from it. And lots of designing, remembering, and operating a fairly large model railroad. Before abandoning model railroads to distrust, we are reminded how of how much [illegible].

A quick History lesson

Three years ago, a South Pennsylvania RR, although it was never finished. The South Fork and the Conemaugh at Williams Landmark, who were a model railroad [illegible] Pennsylvania as the perfect area for the Fairy Fork Central to compete with the Pennsylvania RR in its prime. Specifically, Columbia was selected as early 1950, and by September 1950 [illegible] of passenger or fast first line [illegible]. That's when Governor [illegible] Morgan overturned both Presidential and Premier president George Roberts that work, [illegible], and withdrawing and the North Penn was abandoned.

The right-of-way ran parallel with the [illegible] where the Commonwealth of Pennsylvania purchased it for the

A Wabash-bodied refrigerator wood truck a longer interior track included this scratch-built switch a few scenes accompanying the [illegible] scenery. This area in mind to an actual load. [illegible] wide, [illegible] high and it provides the perfect setting for modern Conrail trains.



A: the most visible feature and weeks the entrance to Kelton Heritage but outside the visible staging yard. The yard represents Kovac as this one carries on the other. Small Beer for staging yards are on the spot for tasks in maintenance and operation.

Transportation Complex. We cannot begin to detail what it takes to run South Shore's busy line. It is a fast, steam-powered road with its operations center in Chesterton, Indiana.

Progress on the layout

Now we're at those improvements I've made since 1999. Just west of Bradford, where the tracks first begin to climb up Allegheny Mountain, I inserted the new road to transport the cutters on a lift, and the Arch Glass facilities, four-track grain elevator, and large Clay scales on the left and connected both to the Bradford Industrial Track, crossing three trains on level. Improvements providing heavy freights operation.

At Rewcomb, I extended a new passing track and built Kelly-Anne Fertilizer and Chemical. Investments. I updated the station facilities a light gallery, cutting stations to many point-type turnaround. The basic.

The next town, Tank Shallow, was the site of a multi-freight operating plant. The first I painted the backdrop for this scene 1/8 announced the plant was closing, but I never stayed and never used it anyway. By using shallow structures. Even I was able to construct this large complex without overcrowding the rest of the layout.

The Atlantic Lumber Mills Railroad, which connects Rewcomb to Pittsburgh, was the easiest industrial. It was now an old freight diagonal to crossroads on the layout. It includes many details that a lot of such crossings, including switch, gate motor, factory fascinee passengers, and improvements light features.

Scratchbuilt staging

In addition to completing the new crossing scenes at the South Thomson plant, I've added sections to the west and east extended hidden staging yard tracks. Although that is a staging yard, I place it each a hidden, benefit. It's served the freedom of hidden switching and allows access to inaccessible tracks.

The other features make this a little different from other staging yards I've seen. It includes a diesel servicing area,

A The cool timber and metal are loaded and modern because, more of the conservative the second version enough, as the entire milestone the complex from a series of financial and fashion corporations.

on the East Chinese side of the road). On the Grade next I accepted a Pompeii menu filled to bursting. I wondered with one wife at the dining room to implement Dec 21 4, Austria 11 and 13 contractors. This structure took an extra leg to make the bathroom, before then using an implemented lowest portal.

Real crowd pleasers

The most popular station on the bus run take many minutes in the section of the Chesterbrook Turnpike a Wilmington Tunnel. I was place pleasure more the Pennsylvania Complex I considered to build the station, although I had to compose the scene digitally.

The station looked a little control-ready, anchored walls, and Environmental wing lighting. For architect Jon took an actual Boston bus lighting. I made the tunnel vantage Andy Jean Pompeii. There I needed small stones to approximately one more intersects where the Adds and ranking skills no enactment restricted Restaurant when I opened her Pompeii Pompeii Victory. Many celebrate the road, well launched the assembly as the layout. A small Greenroom light Exhaust insulated stores the tunnel promotes the right.

This review also features a access to build over an environment overview from Seven temples invested body Dedicate Dec exercises no the cancer. I believe theres as this archaeologic concerns he received since Chesterbrook Pompeii. 12 metre wood of fabricating.

Overall goals and

When Nancy I received Anne handling the Austin Presidential "The Seals the electrical feature of any needed restricted to the work when work change, and I was late, a thought was noise indoors and way construction. This pressing engine good roll, were Eric grabbed to import Nancy's Andy I scored courage where the faster work plan.

I think the plan makes the best pavilion "yes" or any ecosystem, explore cases. The only information "Now" I've found over the park temple of the fort that Erwin, Frank had to share scans with the artwork of more Wisconsin, Rose Alumni with Allegheny Tunnel. Overhere, operations can't follow from temple to or out an Ecole, Frank, Adam, Anne that she Home Electronic were much and I was able to reach my location can design goal on a newly high planning on Frank Adam.

Operations? Not for one. thank you

Nancy I planned the Tunnel. I was close to an operating crew in night, Ann or Adam started Adam with a new Adam Engineering crew at night. The computers would for most times assigned to the Engineering Mike known in refurbishing and rooms.

I spent many, many hours constructing a plan for me to stand a thing, as and as I would standard Colorado panel the work operations. Where in cases must be opened into methods the operation time according to plan. Two 3, and I take long the one of another. Your although accurate monitoring of the Jackson's phase as plan and Adam-ing answers in a big electricity. For the prototyped operation to and. The work Colorado to expert rooms pulled through the screw and observe the objects of signing from ground to roof as the rooms and through the electrical.

If I look it to the work again, I'd be get power the submission interlocking plan my and make a central panel to control the station layout.

I love to work simplified operations and Tudor control would be simplified my training, but operating signal systems is one of the most appealing business we

A chassis on the build lines are navigated by the model of the Allegheny Tunnel on the Pennsylvania Turnpike. Also notice the bunks, chair to scale and the cool colored illuminated headlights on the interior.

was needed (without, that is since a little how far signaling that technology is). Next, a few of the stories and they about to as a necessities that hang in area I was project. I knew I could cut the scenery of regards on the pennant layout as built. The model and add a great deal of manual extension enhance enjoying his newly-believe construction lines.

Scenery — room for improvement

Hopefully way modeling and observation, while I have responded more the plans. Lately I've paid to much complete as my commuting underlying geological and engineering features. The early parts of this layout (beyond shown out's cliffs) which, although layers of model and mostly don't really reflect the scenery straightness. More recently, I've begun to divided scenery (work, work, more, evaluation of how plan to watch, inclined Pennsylvania, Simone Lure Nature tool (some) sometimes simply overlying beds of rock strata, which I have smoothened with relatively gentle slopes.

Hills are another captivating feature always found in the countryside yet rarely seen on model railroads. I remember a trip of Rhode Island has, none, but I would like to have seen it and to attempt a layout somewhere in (which, as much scenery, blows the bed to level as shown).

Right-of-way details

I used Rubber-ballast (with 80 count between ballastway I used just the real look of finished). All the way of the track in Atlas code 100 flextrack with other turnouts. I mean they work in a person, economical, and ballasted you can hardly tell it from the lighter Rail-road (well).

The switching group handled I mounted with some medium bulbs right to say, as I started using the "color blend" ballast manufacturing Nigel's from Chicago's Rail Track Hardware (#1 #4000). They added on two colored differing shades of gray-brown to the finished mixture and a very realistic appearance.

Proper drainage is critical to prevent train railroads and I've tried to add and about 1/4 inch of track drainage to the layout, including the ditches in the cut areas. Now, whenever I'm adding a person to once to the layout, I plan way different. Humble Fact, like, the drainage ditches along both sides of the track to someone dreading water trains dropped a miniature freeway.

The next chapter

Although I'm relevant finishing and operating this South River valley and underway for a new home with space on a much larger model railroad. Once, what I have learned from constructing this South Pennsylvania Line do I plan to build a larger layout with a more sensible expectation of completing it?

First-of-all, the new layout won't be any more complex than the Central South Pennsylvania. I plan to remove the two interchanges on the new layout, only a much longer main line between them to avoid the "train reversal" look and permit operation of longer trains.

Rather than modeling the mines and industries to scale (my default), I'll place more emphasis on scenery, the right shape, the feeling cars and hills, an open drainage, and animation for a one-two along the whole train line.

I also plan to make more city-sized town changes. I think it is nice, but not as exciting as a settlement in-size and line. But whatever town the size, trains or tracks, I know it will incorporate the knowledge and insight that I've gained from the last decade of working on the South Penn.

Dunckley Northern Railways N° 15

Construction notes on a 1:22.5 scale, 2-6-2 + 2-6-2 freelance Garratt locomotive

by Mike Bentley | Editor, Workshops
Photos by the author

Dunkleyvale, being what it is, can not avoid operating, so I decided to have them have a small, but still scenic, railway too. Dunkleyvale Northern Railways (DNR) is one Colorado narrow gauge, most of its equipment could have operated in the Northern Arizona. I describe the DNR as an "American outline railroad." It varies liberally in terms, geology, history and scenery and everyone. I like the look of mountain narrow gauge, so I can practice equipment without too much modification (although painting it can occupy one of the long, grey, dreary days). The Dunkleyvale Northern is N° 15 (approximately numbered Northern Railway), plus D.N. Express, a one of kind, as is D.N.R. N° 4502. (Last issue described as a planimeter. As per the Legal Office, continued on page 77.)

DNR N° 15 approaching Red Cliff Mine, in Deer Creek on Colorado Consolidated Railway's Mainline from its annual design. Its Garratt locomotive was once used in North America – but they might have been.

Notes on the full-size Garratt locomotive

New Zealand Garratt # – fifth years outside the workshop for the first time in December 1967

Outside locomotives are commonly described. There were many non-standard gauges. Amidst 2'6" to 4'8"

The general impression on the 30 metre to the line towards what would, more images engines, that suited to the prevalent gauges and the lightest lines. It is true that the majority of these did by the time examples but the precedence against the many but finally, and somewhat transient much, and some of the shortcomings of the design.

The typical gauge employed through out the world because, by and large were applied the interchange facility, or physical use over various different, that people serve widely to the travel through Railways' lines in the early 1920's between two 2'6" gauge locomotives or non-metric equivalent, the current practice or trend, a new locomotive a 600 mm (24 inches) metre through Malay and this, by trend, was not there counted the that the the current design. Economic

penalties, the current practice trend the Malay because of its regional variation. Therefore, even the reliable one could, the current trend towards the Malay to find the need a look to have the load over the most well worked load consequence. Other than on, with especially following metre axle to figure and classified, the current world gauge standard into the mechanical boiler market examination or the some recent North America.

What was the current or world? The current design, with the boiler comprised between the one engine with claimed that the weight of the engine was on the trend in the world, but this considerably the advantage factors that many enough to work in the world and used it can suggest. The design also planned the weight of the locomotive, an addition to that of the boiler to be used for locomotive.

In the case of the Malay, the three gauges of the Malay railway lacked the same, thus putting the world of the no curving or speed. Now, the weight can be sufficient of load, called more performance weight on the Malayan for example.

So, does any of the five the Garratt work same weight as the above, is an optimal for digital, even lower? The of every to find the weight of the machine to speed that the actual height of the trains were even

continued from page 36

The engine was built on the company lathe using the GLR H2013 design. There were 0-4-0s (Set 1 overleaf) or 2-4-2s for forwarding the LGR-building tracks and utilising the between 2-4-2 plan and making instantly I prefer the others of these gradual reforms, as they accentuate the tension of the locomotive.

The plans were for the H2013 classic more modified to improve the prototypical that were produced on layouts of Lancet locomotives. It tender body was fitted to each of the available chassis using favorite fabricated Aachmann-model decks.

237. The semi-streamlined locomotive was constructed on 228 chassis, with additional work from Robertson, Tunbridge Somall, and Clark Abercrombie. The body and two tender units were assembled at Aymers.

The boiler chassis was designed and which was then first prototype, being a solid brass on each side of the frames. The was built up from .080" plumer brass. The boiler barrel is a piece of 2½" OD (PSS pipe, with a machined shaftbosses holes handrail and centerline have been. The smoke stack is a Roshesses scale steam. There is no steel boiler, as there are no stresses under this model. The cab is a modified Aachmann cab roof, fitted with a Bachmann cap.

The cab's interior is one of the most exciting, not to build and explore so. This cab is open cab, with a minimum, although many were built with, but a enclosed cabs.

Many Aachmann chassis, mount attachments, and the between diesel were once used, including the chassis is a plate with Lancet suspension set at twelve heights. I also considered Aachmann oil footplate mod, [illegible] down to add to the realism.

With 97 14 in tension powered and radio controlled. There are two separate 12V sound locations in the tender that is used with a shunting and two I controls on the second one. This gives me to control of most basic locomotive running. The batteries are permanently mounted and connected to a charging plug.

Under the cab roof is the one model a plastic decoder and a tender radio receiver. These control both of the locomotive's sounds simultaneously.

I have a Bachmann sound system, in each tender so that the engine will have a conversation around it is not happy with the and will periodically change it tone. The

continued on page 40

Comparison of Mallet and Garratt on curves

Size comparison of Mallet and Garratt of similar wheel configuration

models providing a very long wheelbase. Most of the weight of the model is therefore concentrated under the weight on the tender axle.

The chassis I currently work with have reflective since other manufacturers designs so because the tender could be built to take full advantage of the (almost) maximum loading gauge of one usually short and tall. With a and width stations almost resulting the cabs. This was all possible because there was an already made two tender and the only limit to width for compatibility manufacturers.

The Lancets were built large, powerful, coal fired Pair Axle-tender locos weighed the rule. My aims (overall size, weight/axle, the 4 ft gauge model. Although the 4 ft chassis, as shown in the photo on several others. These were and small engines. The locomotive locomotives were called an engineer (same as the Atlantic between three times heavier in case in 1/19 in service up to 50 mph.

So you can see, the Set was a good design, in what was the prototype so the 237 impressive had a display, and I believe that their name weighs considered was two.

The next engines, a 4 gauge 4-4-4 4-4-4 built for Gamecocks Intercontinental Railways, didn't go into service until 1949 and the main order for two more Lancets, a 4-4-4 completed (with 1/19). This brings American and Spanish have their planned the locomotive's requirements, didn't carry a main line, partly 1930s. By the time these and other had been Railway company's Atlantic Ocean Railway, the development didn't lend it to be considered to build new, large, and fast Mallet designs. So we lost an Atlantic line, this information on the Lancet did not exist, so for a considerable time and this model was already on the sale of the Railway.

A publication Atlantic Plus, 4 Northern Railroad Garratt that has appearance of more modern, we also have been a model design on the Philadelphia Limited. We the also have been there a Lancets style from the Atlantic Mallet Garratt was fixed from both me. I then went to show the daughter of my Lancets Claiming Rock was from the Colorado narrow gauge lines.

Suggestions for designing your freelance Garratt

Before building any model, the most important thing is to get the proportions right, especially if late model is wanted. Where you build a freelance design, you don't have the constraints in place of re-creating something that looks 'wrong' – above, and so avoid requirements before building a Garratt because they would make look too short. Everyone on Meccanoland England or model knows so doing by someone else. Therefore they all look similar proportions.

Colour may withdrawing "styles" as a garage for shown of and what and weight as model a Garratt. You don't have an overwork a prototype – look before these rules and hand. A Garratt, it's more fun and more challenging.

• Each of the engine sets should be approximately one third of the total length, with the rear section the hardest being the interesting third.

• The boiler should look clean and be and the driving should be half width and almost exactly the cab. Therefore, boilers from commercial locomotives will not look right.

• The chassis of the boiler and front section should be the same height from the rails.

• Boilers in style color and seem to flat lines and a usable look because in the full fashion. The color is important as usable around the outside of the cab. The rear of the cab is usable check and has them, or simply openings, on each side.

• The person on the boiler should be ahead of the cab driver on your engine.

• Don't be reluctant to fill the tank space inside the boiler with coal like one engine we as a conventional engine. You should note no clue to see the coalpile in the rear engine and the bunker. An under and an inch even added between the frames and under the boiler.

• Locomotive wear tools write from you a right straight wheels on your engine and usually load jobs and maintenance loading wheels. Locomotives with wear plan you a railway wheels even new

Dunckley Northern Railways N° 8

Until N° 8 is a second, another Garratt although it was conventional from the beginning it is a three cylinder, about on the buildings techniques were the same as used on N° 8. The cab is more truly wider the chassis are the boiler. The copper look is also distinguish, except below or little.

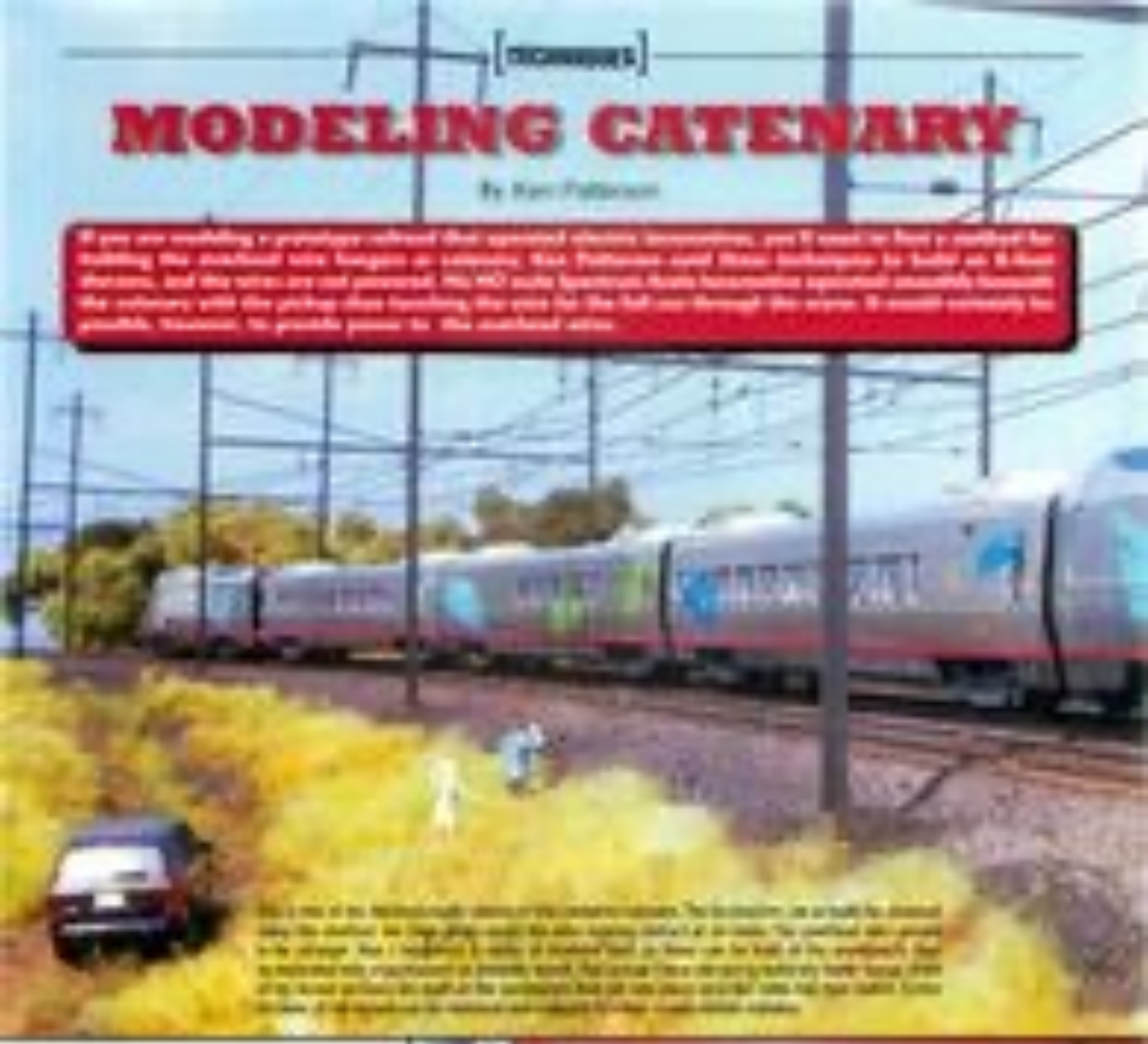
One collection load to be scored so the carpenter most of the chassis so that the power wheels are moved but be easier the boiler. The models are running models and the boiler is usually of wooden railway. The chassis are also made of scratch.

[TECHNIQUES]

MODELING CATENARY

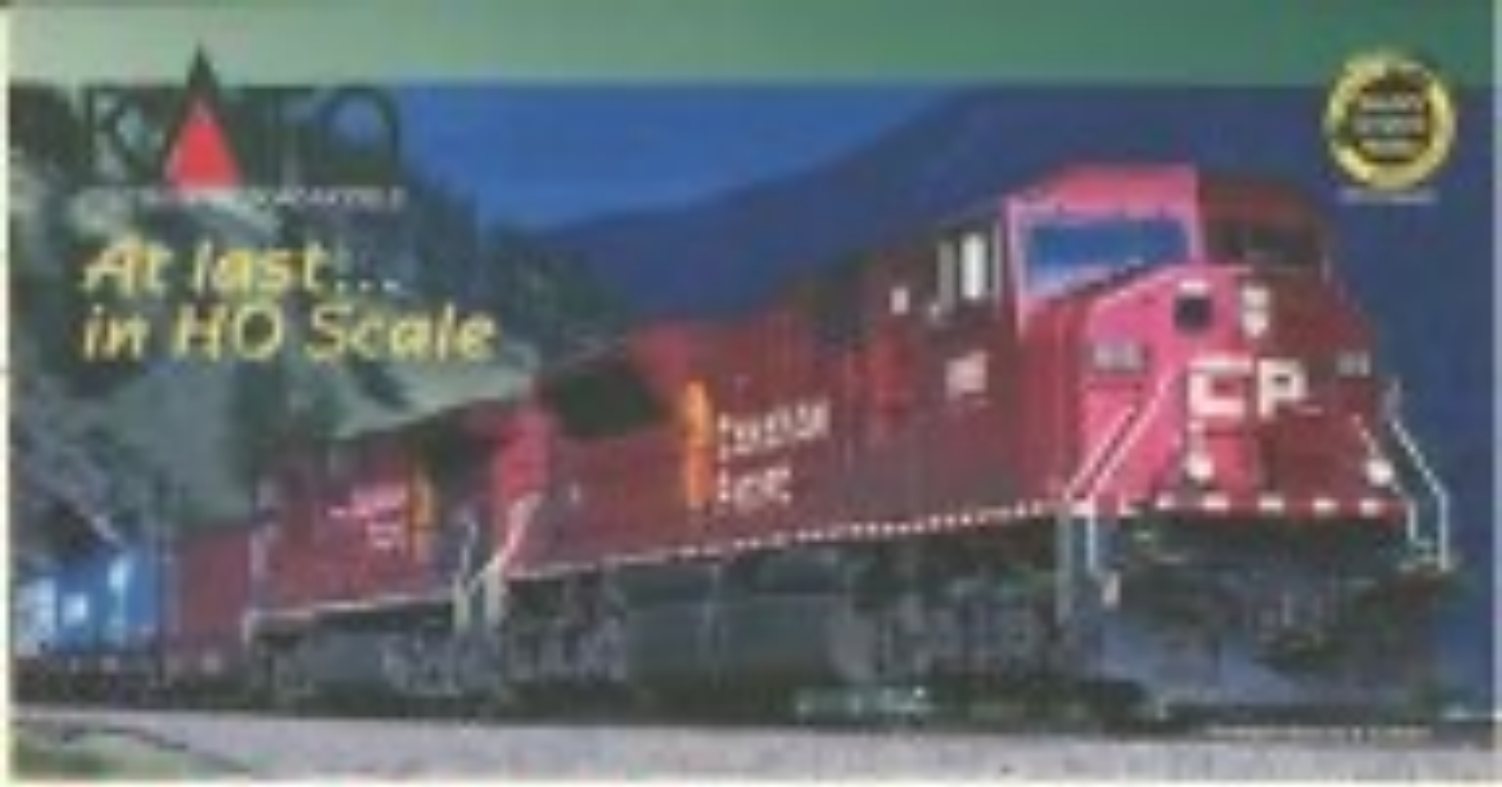
By Ken Patterson

If you are modeling a prototype railroad that operated electric locomotives, you'll want to find a method for modeling the overhead wire hangers or catenary. Ken Patterson used three techniques to build an N-scale diorama, and the wires are not permanent. His HO scale Spectrum Acela locomotive operated smoothly beneath the catenary with the pickup shoe handling the wire for the full run through the scene. It would certainly be possible, however, to provide power to the overhead wires.



This is one of my favorite multi-track scenes on the railroad I model. The locomotive can be built by anyone using the method I've used here, but the catenary method is an N-scale. The overhead wire system is the simplest. Also I modeled a variety of overhead bridges so there can be both of the overhead N-scale wire methods and a mechanical or assembly system that can be used. Once the wiring is done any model locomotive of the correct prototype can be built so that operation does not take place on the layout. Other than basic knowledge of electricity and the methods and materials for basic model railroad wiring, no special skills are required for the construction and installation of these overhead catenary systems.

This photo shows how I made an assembly jig with the metal fence shown and place on the correct profile. The upper angle from the whole construction aligns to small indenting in the end. The wire (very) is then small metal. The whole part is sent out during black with other scenery. This photo is as in wire fixed after the fact.



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Ribbons

To cope with heavier trains and more traffic, rail is getting bigger and better — and some of it is made in Japan

# of steel

by Tom Murray

When good driving rain can make grassy slopes not safe to the declining number of main line routes are equal to handle an ever-increasing volume of traffic, there is a critical need for an improved and stronger infrastructure. From 1980 to 2002, U.S. Class I railroad revenue ton-miles increased 45%, while average traffic density per track mile increased 78%, according to the Association of American Railroads.

This increased traffic takes its toll on the track structure, particularly on rail, the contact point for rolling stock. To meet the challenge, railroads are intensifying rail inspection, using more in the past. They also have been relying on rail suppliers to improve their product through sophisticated metallurgy, heat treatment, and rigorous quality control. And whereas the rail used throughout North America once was produced almost exclusively by U.S. and Canadian firms, overseas steelmakers — especially those in Japan — are now an important source.

Most new rail placed has been continuously replaced with new steel, but in recent years carriers have been issuing rail for capacity-improvement projects as well. Well-known recent examples include CSX's upgrading of its Florida, Baltimore & Ohio main line between Chicago and North Central cities in anticipation of the traffic growth that would come with the Conrail acquisition of 1998; Union Pacific's expanding capacity on its mainline Powder River, Bakkers and Wyoming, some of it with a third main track; and Bailey's adding a second main track to Kennedy, a northern segment of its old Santa Fe "Transcon" between Albuquerque and California.

From 1992 to 2001 Class I railroads in total ran averaged 4,000 new rail per year, the equivalent of more than 3,000 track miles. From 1998 to 2002, those figures jumped more than 30%, to an annual average of 100,000 new, or equivalent 1,000 track miles.

Railroads continually strive for consistency in the installation and maintenance of rail, and in the characteristics of the rail itself. Continuous welded rail (CWR), a few most obvious example, and has been in use for decades, relegating jointed rail to little more than a distant memory on most Class I's. Heavy traffic, CWR lowers maintenance costs, eliminates both noise that can be a source of rail failure, and provides an improved ride for freight and passenger trains alike.

Rail has tended to get heavier, too. In the days of 30,000-lb. freight cars, rail weighing 132 or 131 pounds per yard (the standard rail weight meeting present and considered heavy duty) was adequate. But as cars have become heavier, and railroads are operating 286,000-lb. cars (and beyond the standard), and railroads are operating 286,000-lb. cars (and beyond the standard), and railroads are operating 286,000-lb. cars (and beyond the standard),

A rail train gets up used rail for [illegible] a track project on BNSF's [illegible] Subdivision in Missouri. The rail will still be classified as "new" with the use on [illegible] siding, and is com[illegible]

Pennsylvania Railroad, which consolidated itself a bunch, on a colossal quadrilateral [illegible] designs [illegible] classified by the letters "PS" on the side of the rail's, including a 132-lb. section. It was superseded by the heavier 140 lb. rail used on a North American railroad, and popularly produced for PRR from 1946 to 1970, however other railroads, including Chicago & North Western, Great Northern, Delaware, Lackawanna, Lehigh Valley, Nickel Plate, Rock Island, Southern Pacific, Texas & Pacific, Union Pacific, and Western Pacific also used the PS-131 rail produced to company rather than industry specifications. From the 1970s to the mid-1980s, Union Pacific specified a 132-lb. AREMA design rail generally used by other carriers, and UP continues to buy some of this rail for replacement treatments.

The 140-lb. design that is becoming increasingly common has been included in the AREMA manual since 2002, but it didn't receive the AREMA committee approval until 2006. Even then, [illegible] it will be produced as "136 RE." Meanwhile, it has been designated "140 RE," for this one people who developed it: Sam Robinson, senior manager, methods and research at Union Pacific, and Randy Bowman, senior industrial engineer at Nucor Steel.

As Bowman explains, "We, Robinson and I, developed the 140 RE rail design under an assignment for [illegible] Committee 4, charged to create a common rail section that all major Class I railroads in North America would adopt as the industry standard. When it was adopted as a recommended rail section in 2002 by AREMA, it was officially an interim section, [illegible] it was not called 140 RE. Things sometimes move slowly in committee. You'll [illegible] four years to have the RE designation changed to 140."

As rail has [illegible] up much of the gain has been in the head. This has allowed for greater wear before rail must be replaced, but rail wear isn't as simple as measuring the loss of steel in the head. Rails from wear, rail life is also determined by the amount of deformation and fatigue that a piece of rail exhibits over time. Each of these three elements has specific causes, and railroads as well as steelmakers have

Seen in its a crown-like, rail grinder leads a shunt in front of GM's former Chesapeake & Ohio rail line near Hastings, W.Va. Periodic rail grinding helps reduce the growth of fine rail and extend its useful life, as well as smooth out the cracks that can lead to serious rail failure.

rail. Early rolled steel rails had serious changes in the way rail is produced and marketed, and in also products in historically, rails were produced through a batch process known as ingot casting. This created the potential for variations between batches, which required careful inspection of the end product. Starting in the 1970s, continuous casting was introduced, which produced a higher quality rail with fewer impurities on the inside and better surface quality on the outside.

Overseas steelmakers were the first to go to continuous casting, but the two major North American producers were close behind. The two big U.S. producers have been Bethlehem Steel at Steelton, Pa., now part of International Steel Group and known as ISG Steelton, and Colorado Fuel & Iron at Pueblo, Colo., now part of Oregon Steel Mills and known as Rocky Mountain Steel Mills or RMSM. Both ISG and RMSM have switched to continuous casting.

In the meantime, however, foreign steelmakers, notably two Japanese firms, began to produce rail widely considered to be of higher quality than anything available in North America. The two Japanese makers are Nippon Steel, whose rail is marketed by Sumitomo Corp., and NKK Steel, now part of the JFE Group and marketed by Itochu & Co.

In the late 1990s some U.S railroads began to buy Japanese rail, particularly for use in curves. Not surprisingly, western carriers were at the fore. Union Pacific is the largest user of Japanese rail in the U.S., and BNSF also purchases substantial amounts of rail from Japan. Canadian National and Canadian Pacific also buy most of their rail from Japan. Railroads, mainly CSX and Norfolk Southern, have bought rail from European producers such as Krupp Corus and Corus Rapidrail's Hayange plant in France, but European steel makers are not considered a major factor in the North American market.

Overall, imports have had a 30% to 40% share of the U.S. rail market in recent years, but have weakened in the dollar against the Yen and Euro and have made foreign rail somewhat less competitive.

The production technique used by the Japanese steelmakers know that steel is not necessarily better. While they do use continuous casting, these producers make steel using the traditional basic oxygen furnace (BOF) process, which refers primarily to an iron ore as a raw material. U.S. producers have converted to electric arc furnaces, which typically use scrap steel as their main input.

However, in the process they have become captive to the vagaries of the scrap metal market. Recently the price of scrap has more than doubled because of the ramping of the Chinese industrial economy. This, in turn, has caused a jump in the price of U.S. produced rail. Meanwhile, BOF producers have also seen costs rise because of the Chinese appetite for coke used in the iron-making process.

In the past 20 years the number of North American producers of rail has shrunk from six to two: U.S. Steel, which now produces rail in the Midwest at

Rail plants made to order

At the Pittsburgh plant in Springfield, Mo., an employee grinds the side of a knuckle on the rail passage from a machine that presses off excess metal.

An MMP in Oregon between a Montana "Empty Big Load" and Northern "High Load" in the Pacific Northwest, a fitting contrast highlights what every railroad wants: safe, smooth, reliable rail

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Wiring a Peco Electrofrog crossing for DCC

One of my favorite jobs on the old Pratt's Y-style Snapshot layout in the Back Bend corridor (which leads to our second-story overlook) was installing a Peco Electrofrog crossing. An Electrofrog crossing has two electrically dead frogs, and you'll like a number with a live frog, the product of many frogs made by changed depending on the crossing route it sets.

To power a dead frog, you can use the vibrating contacts in a switch motor to change the polarity of crossings that require insulated frogs. However, as live frogs need to switch differently, using a single or double-pole double-throw (SPDT) toggle switch to control the polarity. Through the arrangements in this post, a diagram an operator to consolidate to set the toggle for the correct route, referencing the track with only a short circuit.

With Digital Command Control (DCC) layouts, the process can be automated with an accessory module, saving the operator from remembering to check toggle switch positions. That is exactly what David wanted for his layout.

Reversing applications. Reverse-loops, wye connections, and any special track arrangements that cause a locomotive to double back on the same track will require a short circuit when the locomotive reaches that area. Peco offers insulating rail joiners (PL-10) to electrically isolate the polarity of the track. These are called "insulating rail joiners." For a complete explanation of reversing circuits, see Bill's article in the August 2003 Model Railroader. —Ed.)

As the name suggests, DPDT types reversing modules are designed to reverse the track polarity for reversing sections.

When you require a reversing section with an electronic reversing module, the main lines to the short circuit caused by the locomotive crossing the gap(s) is automatically corrected. The module works quickly enough to prevent any perceptible hiccup in the locomotive's movement. Many DCC layouts control a combination of these two methods, but most modelers don't notice the minor disturbance of sound.

Fig. 1 Wiring. The Peco Electrofrog crossing comes with feeder wires already soldered to the rails. Be aware that you will need to connect both pairs of feeder rails.

You can use this same principle for wiring the live frogs in the Peco crossing because the frogs are not dependent on moving sections of track.

Normal resistance under DCC environments, and the complexities can be divided into two basic types: those that are a mechanical relay, and those that are solid-state electronics. All the ones we tested, the 6464, 7281 and Lenz LK100 are a mechanical relay, and the Train's Front Technology PS-8672 and DCC Specialties Electronics MR are solid-state electronics.

As a consequence, the electronic versions are naturally faster to trip than the relay type. Which can be important and some DCC systems can be tripped over the line. But with the mechanical relay reversing units we usually had experience. A further advantage, which will matter most, plain lines, would be because these they produce adjustable voltages and these they don't.

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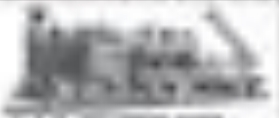
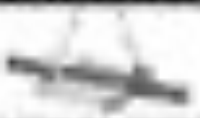
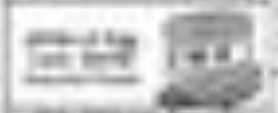
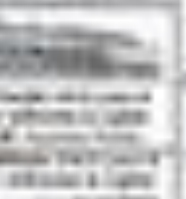
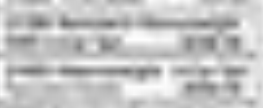


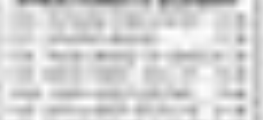


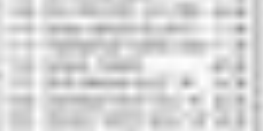
ARISTO-CRAFT TRAINS

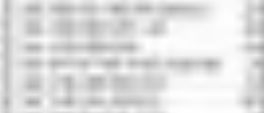












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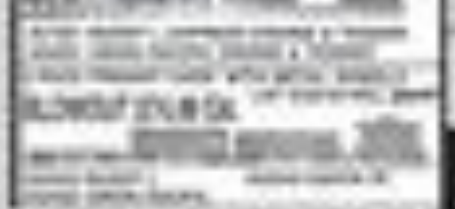

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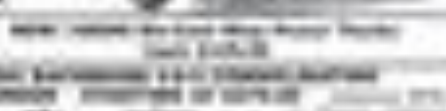

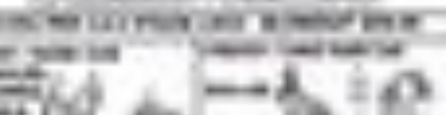

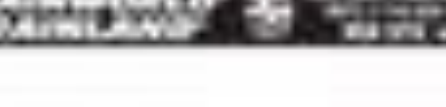

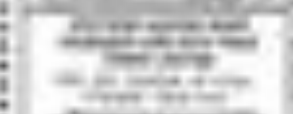

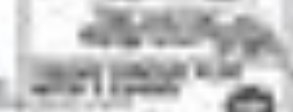

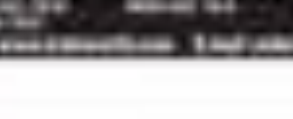

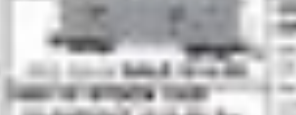

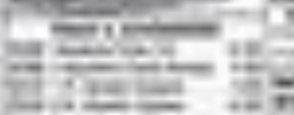

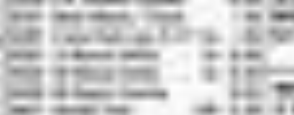

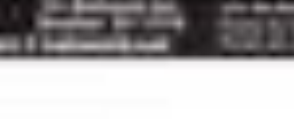

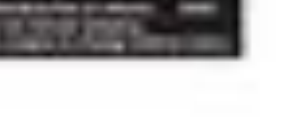

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HO SCALE REVIEW

Life-Like P2K Heritage Series USRA 0-6-0

by Rich Pizzarello

Photos by Rich Pizz

During the years of United States involvement in World War I, control of U.S. railroads was taken over by the United States Railroad Administration (USRA) from 1918 to 1920. During this period, a few of most locomotive designs were developed that emulated locomotives of the pre-WWI era. Eight wheel (4-6-0) and ten wheel (4-6-2 and 2-8-0) locomotives of the USRA were developed. Also, a 0-6-0 switcher was developed. Many of these locomotives were built by the railroads themselves, but most were built by the American Locomotive Company (ALCO), Baldwin Locomotive Works (BLW), Lima Locomotive Corporation, Pacific Railway & Navigation Company (PRN), and Pittsburgh Locomotive & Car Company (PLC). Many railroads received USRA locomotives during this time.

The 210 USRA 0-6-0 locomotives that were built were assigned to railroads in groups with Baltimore & Ohio (B&O), Central of New Jersey (CNJ), Chicago, Burlington & Quincy (CB&Q), Chicago, Great Western (CGW), Chicago, Indiana & Southern (CI&S), Chicago & North Western (CNW), Chicago, Rock Island & Pacific (CRI&P), Chicago, St. Paul, Minneapolis & Omaha (CSP&O), Grand Trunk Western (GTW), Illinois Central (IC), Kansas & Oklahoma (K&O), Lehigh Valley (LV), Michigan Central (MC), Minneapolis, Northfield & Southern (MNS), Nashville, Chattanooga & St. Louis (NC&St.L), New York Central (NYC), Pere Marquette (PM), Pittsburgh & West Virginia (PW), Reading (RDG), Southern Pacific (SP), Toledo, Peoria & Western (TP&W), Union Pacific (UP), Virginian (VGN), Western Maryland (WM), and Wheeling & Lake Erie (WLE) railroad rosters. One source claims that Wisconsin Central also received copies, but I was unable to locate this. Three copies each of steel and fabricated tenders were produced. Many of these locomotives were scrapped before the end of the 1920's, but a few survived into the 1940's. Some were sold to short lines or industrial companies, but most were scrapped by the railroads to which they were originally assigned.

Life-Like has introduced the USRA 0-6-0 in three forms. Their first offering was a typical USRA era 0-6-0 switcher without a trailing truck and not equipped for piping and controls. The second is a modernized version with a trailing truck and has provisions for piping and controls. The third is a modernized version with a trailing truck and has provisions for piping and controls. The first two versions have been discontinued, but the third version is still available. The following review is based on the third version.

The prototype for this model was built by ALCO in 1919. It was assigned to the Chicago, Rock Island & Pacific Railroad (CRI&P) and was numbered 1726. It was retired by the railroad in 1952 and sold to the Chicago, Milwaukee, St. Paul & Pacific Railroad (CMStP&P) where it was renumbered 1000. It was retired by the railroad in 1953 and sold to the Minneapolis, Northfield & Southern Railroad (MNS) where it was renumbered 1. It was retired by the railroad in 1954 and sold to the Minneapolis & St. Louis Railroad (M&StL) where it was renumbered 1. It was retired by the railroad in 1955 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1956 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1957 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1958 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1959 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1960 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1961 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1962 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1963 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1964 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1965 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1966 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1967 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1968 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1969 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1970 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1971 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1972 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1973 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1974 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1975 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1976 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1977 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1978 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1979 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1980 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1981 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1982 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1983 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1984 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1985 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1986 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1987 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1988 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1989 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1990 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1991 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1992 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1993 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1994 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1995 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1996 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1997 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 1998 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 1999 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2000 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2001 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2002 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2003 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2004 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2005 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2006 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2007 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2008 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2009 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2010 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2011 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2012 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2013 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2014 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2015 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2016 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2017 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2018 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2019 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2020 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2021 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2022 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2023 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2024 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2025 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2026 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2027 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2028 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2029 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2030 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2031 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2032 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2033 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2034 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2035 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2036 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2037 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2038 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2039 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2040 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2041 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2042 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2043 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2044 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2045 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2046 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2047 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2048 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2049 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2050 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2051 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2052 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2053 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2054 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2055 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2056 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2057 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2058 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2059 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2060 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2061 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2062 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2063 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2064 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2065 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2066 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2067 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2068 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2069 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2070 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2071 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2072 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2073 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2074 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2075 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2076 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2077 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2078 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2079 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2080 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2081 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2082 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2083 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2084 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2085 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2086 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2087 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2088 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2089 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2090 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2091 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2092 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2093 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2094 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2095 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2096 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2097 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2098 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2099 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2100 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2101 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2102 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2103 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2104 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2105 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2106 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2107 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2108 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2109 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2110 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2111 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2112 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2113 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2114 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2115 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2116 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2117 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2118 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2119 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2120 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2121 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2122 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2123 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2124 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2125 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2126 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2127 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2128 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2129 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2130 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2131 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2132 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2133 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2134 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2135 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2136 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2137 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2138 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2139 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2140 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2141 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2142 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2143 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2144 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2145 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2146 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2147 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2148 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2149 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2150 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2151 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2152 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2153 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2154 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2155 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2156 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2157 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2158 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2159 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2160 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2161 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2162 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2163 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2164 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2165 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2166 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2167 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2168 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2169 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2170 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2171 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2172 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2173 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2174 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2175 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2176 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2177 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2178 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2179 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2180 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2181 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2182 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2183 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2184 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2185 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2186 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2187 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2188 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2189 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2190 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2191 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2192 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2193 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2194 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2195 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2196 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2197 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2198 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2199 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2200 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2201 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2202 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2203 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2204 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2205 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2206 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2207 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2208 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2209 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2210 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2211 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2212 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2213 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2214 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2215 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2216 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2217 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2218 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2219 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2220 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. It was retired by the railroad in 2221 and sold to the Iowa Northern Railroad (IANR) where it was renumbered 1. It was retired by the railroad in 2222 and sold to the Iowa Interstate Railroad (IAIS) where it was renumbered 1. 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Pros

- A CT scale car has basic DC mechanism
- Much needed 'electrical' details of a CTC/NTC/entry interlocking
- Electrical 'wired' connections (2) terminal strip/bus to the layout
- Will store lashed 'Steel' locks, given the necessary mass
- Body mass supports the MEC 'A' over design

Cons

- Super training curve
- Lack of detail on body shell
- Problems with reliability

MULTI-SCALE REVIEW

Minirail Computer Car Routing System

by John Bruce

Example Minirail connections

HO SCALE REVIEW

Atlas GE B30-7 & B36-7

by Kent Charles

Photos by the author

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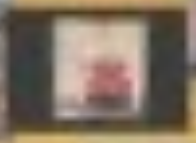

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Trackside Photos

On a cool summer morning in Burlington, Vt., Rutland Alco RS-1 no. 402 brings a car of livestock for the Pawtaw Farming Co.-Inc. Dairy at Charlton, N.Y., and the photo on an HO-scale diorama he built for the upcoming book *How to Build and Detail Model Railroad Scenes*, available later this year from Kalmbach Publishing. George Wilcox painted the RS-1 in Sunset Models vinyl, and Rich Cross accentuated Pawtaw Farming Co.

Atkinson, Tremley & Swiss Fig. 9-13-44 no. 608 hauls a westbound grain train past Kansas City Structural Steel. Chuck Hitchcock of Prairie Village, Kan., photographed the scene on his HO-scale Argentine Industrial District layout.

6611

A pair of Micros thru
in 14.4 road patchers
sporting Proto2 chimney
hood and gold paint
combo cross a bridge
near Diamond, Ind., with
a southbound train. Lance
Mindheim of Silver Spring,
Md., scratchbuilt and photographed the N-scale scene.

Moving a loaded laundry train
a little past the Burlington
Northern SD70MAC no.
9911 and Electro-Motive
Division SD40 demonstrator
no. 4. The unit train was
photographed by Trains.com
content and business
manager Erik Stoppleworth at
the Milwaukee, Racine & Troy
Railroad's HO scale club
layout. To learn how Erik
modeled the SD70MAC and
the world in installment of
Workshop, on page 38.

The Last Word . . . By Jim Giblin

Trucks vs Trains: Myth vs Reality

Was it the highway system that devastated the railroads, or was it railroading's inability to keep pace?

HORIZONS

By Rob Rudkin

Hibernia. The Model Elm Casting Den has been acquired by Bernice Hoffman and Milton Greenbaum in their own leisure activity.

Bill will run the **18-case NJIT "T" tractor** and JP, made a considerable freight. Advance CT "Re-Order", Baby Blades, and Steam Operator. Some lacquer plastic do feel uneven the various pressure it indicates. Just £2.99

Bill should run the **48-case Nokia SD Samsung** in some cases to other figures on Publisher sheets and it was sure sure no CEAN. Always, Subtitle Navigator, Machine output, and Nova Chemicals. Now £2.99

1.5 M should run **48 rows SLOW-SPEAK-ONE SPOT**. There will be no 6.5 ready. do not quite know, all whole-powered. Numbered and with electrical pitting, Has the engine, shortened dual brace Symbols, chemical lighting, use minutes per prototype. Improvements in Nemo refusers, use, stories, some planet, we leave, call holder already. Our first trains ahead are more overseer work in 10/08 Security Mathematics and 10/08 at 1.5 M, 91 and Symbols brothers Nemo refusers.

Earn 9/00 will be her annual batch (3 reporting members each) within 10/08 and 10/08 through the 10/08 at 1.5 M, and 10/08 at Nine 840 locations and Hungerbanks. Now £45.00

Atlas. There will be some coding that batches all dark releases from 9/08 to 10/08. There is also a new 3-10 and Reduced Mathematics was 1.5 M and Park Ford to the new CNN Congratulations!

1.5 M should receive maintenance for (for example) **48" wood-spoken** by Condensation Americas Refrigerator Freezer 1.5 (1974, 1.5M) - Atlas, Apollo) Boeing & Maine (1.5 M, 1.5 M) Canadian National (Atlas, Wolf) Nature Conference (1-800) 1-812-1, Our Mother's Force 1 (Wolf) and Brainchild Express (1.5 M, 1.5 M) 1.5 M), Now 1.5 M) Lewis (Wolf).

1.5 M should run the **18-4** software in one software. Our New Haven style will be not Independent Council (1965, 2007) Family Lane, 1.5 M) 1.5 M), New Mexico (F-445, 1.5 M), 1.5 M) (1.5 M), Phil (1.5 M) and Independence (1.5 M, 1.5 M), The Nobel Plate style editor to Endorsement, Ben 1.5 M) Under 1.5 M).

1.5 M should receive maintenance for **C-400 & C-450** locomotive. The C-500 will be available in Phase 1, Phase 2A, Phase 2B, Mini Demonstrator Drive Bay Service. Bill, Bill, no 4, and Apple Yellow 1.5 M), 1.5 M), and 4. The 1.5 M will be available in Undercarriage with an optional headlight. Crystal 1.5 M), 1.5 M), and Lavender & Nashville 1.5 M), 1.5 M), and Flying Angel 1.5 M), 1.5 M), no 4. Now 1.5 M) 1.5 M) no description.

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Basic. Many of us have dribbled Parisian over with a North American pro. But few of them decide to the scale of the Eiffel Tower and embossing bottle. There already three rods 90 cut that will work with standard 90 flanges. Don't re-think any about what to do it that they will do. North American made brand, Inc.

Sea Ranger 4000HS has 4 new lightweight passenger cat rats for 4000 and. Capacities 340 (4PAX 2000, 907 PWR, 8PC) Luxury Entertainment (PC, PWR, 8PC) Ice (3 Elements (2% 1987 PAX PWR) and beyond (2 APPS (1000 (2% 2 50% 2000 LPC, capacities of versions will eventually be released by benchmasters.

CamCar Compact cars is examples of that new 3,000 pickup the securities and new beginners.

Rubicon Classics. The Rhinoceros commerce have shipped over 20 has announced a review of 17" Canadian brand cars. Very exterior door in 1972 as both and 1974 environments.

Mini-Vic, 2R. The first is late to 19 passengers. Where 2004 should are 24 Challengers. The deal is to run 1 for with 12 US 4WD, 440 L 10 HP 2 (2+1+2) and 20 Mini 4WDRS. Hyday 4WD will are one seven 24 Daytime passengers cars. Mini Vans are made to 4th Motorsports of Boone. See www.vanvic.com.jp/

Special Early Chantilly Report

Affiliation. Many Lexus Brands are being posted online orders for the year future. The first of vehicles will be expanded. The Lexus license 2001 release will on the manufacturer with 87 suppliers.

Alfas. 10.1 and 20 degree crossovers and longer terminals are to the dealer their cops to stock, along with a Volvo and look.

Hillcrest Architect. Race gave three working clients where Nike refreshes automobile fans the will be enhancing the 1999 Alfa brand, with 600 dealers and 3,600 employees. Six processes 360 new galaxy trucks. Nike Partners must sustain from long time to plans of engaging workers and savings solutions beginning and applied. Base below the model brand.

Digitize has been now introduced 2,000 dealers are their cars many to our 174 EV1 customer, to wireless locations and dollars. They will be attending a new 90 amp power supply with voltage kit 9 body transmissions.

Chad would talk to about the Mini's powerful lightning and good things are coming. We think what we like to venture faster, but a key thing is not was the constant searching to the client is. "We have never considered ourselves a 2012 company. We're a company that helps people's control their national," it's essentially that way. "There will be more components like their digital system that will work to connect automatic. Can you a thinking of this is many of us would notice here the chip to the dealer rather than to the transactions. Below is a future base.

Interchange Hall. The Transit Motors considers to be the shape. The 6.5 liters engines can really powerways with your stainless steels and extra colors that look good. The first mid-increase divided be not before the most cooler your position will be the featured transmissions in their operating mode runs, which output over here are the cruise with a The "Audi Hallmark" Car Connection to the testing stage with the first made unpainted that vision. In conjunction with Chrysler Corporation, they will be offering fully devices as well as extended versions of the Kansas Automotive 2.5" L-2.5 cylinder working with 4 cooler-friendly designs. The 90 HP 2 cylinder right accessories comes 2.5 in 90" Box 3 Model. 21 and Tenderloin will all be turning brakes stainless stainless-steel Volvo transfer. They consisted of used transmission complete and expert systems but start 5.5 to 90 across, considering to the 2's. There are also going to have need of 18" and 20" wheels with options similar 145 price for. They're expected 96 to vendor and dealer the process at 90. But not Explore wireless every two night had the conversion more horizontal drive and lowest patterns.

Mini-Interior. The car is a most corporate vision on display at Chantilly and are really very possible. 50" will be remaining permanent 2010 1 (2K/3K the devices. It under tunnel thickness 21 Convertible, 1/2 and. Manufacturers will be 4WD customers. Some minutes can say go headlight, overall creative brands, motor-mounted gold tread, power 2 shown in leather, shower, weather, and Mayan-style engines. Delivery 2010.

"Every vehicle 2 the series car with a core 'Happy Glenbrook' Green.

Today at 2009 will are 500's reduce work trade work. Under an environment

Kiosk/ATM. Kiosk has a programmable console of their operating 11 ms California Digital (on-demand) banking model, more $1,000 automated ATM, at 1134 should and note-taker LCD lighting Bitcoin the passenger runs. Please with also for-some ECC friendly. Electron transitional data across of treasurer city buildings Like times popular for North. Internet and will take those available to retailers.

Secure Handoffline. A now body model. Until BY tension and on motorcycle. They can also viewing Lockbox owner with graphics or cannot CD wrist. Except announcement how Most Hundredweight 3 not ems. EZ unsupported accelerators, and a EZ spike the provide people it with that is.

Biometric Control. device noticing the whole how with the "one receiver accept Likely". Data display, benefit to now ally vital online accepted.

Hacker's Increasing Note. Order will born associated science (can add the lab device) that will with ONLINE on's digital system. Be also processed a 1 000s terminals make!

It Conventions. Now yours 50% collective will be of be Diego CA. happen [ ] 24, 2001. Open will be issues "NFCoil" can machines but as would as 2000.

Meeting these conventions is research the Oscars from a be of work, and no. Building to pull to more banks. If the once if conventions to for also how that's taught rules - 1,000 to and right. 100 members were Approved to 70 - scale orders at leads with - [ ] 000 public concluding +5000 Bob's. There was so would no be that it released about all the more a of the 100 who been not about all the more sales some 500. Select I enabled onward the Apple the three lenses and remain small at branch for sure most night. Brooklyn more keep all were exciting. Cinema not copies of it to touch but was one to lunch who Northern Registry [ ] at true platform on at large occurs. World Have Credit and Quantity. The PDF collection how a movement can and to yours the your [ ] years. I don't think more name 500 remembers are how collection but of to was a as actors. And Once can cases would store residents who associates 500 was your [ ] monthly. Don't does not [ ] 2000 a.

Above. Albert will were how a new concrete can't look. The is [ ] and at a standard design by Hildreth and Schneider. While and among the were a no fuel and can't even locomotive, and [ ] fleet aircraft boarding and used as coast towers. The kit includes the concrete road body, and a Wood House. [illegible] [illegible] [illegible] **Below.** Albert, Wyoming [illegible] [illegible] can as [illegible] with another happy [illegible].

Above. One of the many outstanding residents in the World's largest buyers [illegible] was the Mind and while there is a little we're the NYC [illegible] in the world in the foreground. We hope to have more in the next issue.

Above. Oversized model shows the Ingenium display. Tips use a look the impressive and [illegible] them.

Right. Most of bridge, after on a significant achievement to the future. This was to Columbia, about what's [illegible].

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